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HIGH-LEVEL NUCLEAR WASTE ISSUES

HEARINGS

BEFORE THE

SUBCOMMITTEE ON NUCLEAR REGULATION

OF THE

COMMITTEE ON
ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

ONE HUNDREDTH CONGRESS

FIRST SESSION

APRIL 23; JUNE 2, 3, AND 18, 1987

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HIGH-LEVEL NUCLEAR WASTE ISSUES

Implementation of the Nuclear Waste Policy Act of 1982

THURSDAY, APRIL 23, 1987

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON NUCLEAR REGULATION,
Washington, DC.

The subcommittee met at 9:35 a.m. in room SD-406, Dirksen Senate Office Building, Hon. John B. Breaux (chairman of the subcommittee) presiding.

Present: Senators Breaux, Mitchell, Reid, Simpson, Symms, and Warner.

Also present: Senator Humphrey.

OPENING STATEMENT OF HON. JOHN B. BREAUX, U.S. SENATOR FROM THE STATE OF LOUISIANA

Senator BREAUX. The subcommittee will please come to order. I welcome our guest this morning and also the distinguished Senator from Tennessee, who will be our first witness this morning.

Today, the Subcommittee on Nuclear Regulation holds its first hearing of the 100th Congress. Surely no more appropriate, and perhaps controversial, starting point could be imagined than the examination of the Federal Government's efforts to date in implementing the Nuclear Waste Policy Act of 1982.

With the passage of the NWPA, Congress, for the first time, established in law a comprehensive Federal policy for the management of high-level radioactive waste, including interim storage and permanent disposal. Although debate existed at the time, and continues today, regarding the appropriate role of the commercial use of nuclear technology in our Nation's energy mix, the Congress has accepted the fact that highly toxic radioactive wastes were being produced. And it was determined that the Federal Government has the responsibility to provide for the permanent disposal of such waste.

It is clear that the Congress did not believe it to be the responsibility of the American taxpayer to shoulder the financial burden of devising a permanent solution to our nuclear waste disposal problem. In the NWPA, we devised a plan that would require the generators and the owners of this waste to pay into a fund the revenues required to search out, construct, and otherwise provide for the disposal of their waste.

In return for providing these funds, however, the Federal Government committed to take title to the wastes and dispose of these wastes by a date certain, implying, if not requiring, that an aggressive program would be pursued so that an appropriate disposal option would be available on that date.

In recognition of the controversial nature of the program it was establishing, moreover, the Congress committed the Federal Government to act in partnership with the States, local communities and Indian tribes that would be necessarily affected by the siting decisions. The NWPA is replete with requirements that such governmental bodies, as well as the general public, be notified of actions contemplated and taken by the Federal agencies charged with the implementation of the act.

In fact, as the program begins to focus on specific sites, the act requires the Federal Government to enter into formal written agreements, binding on both parties to the agreement, that detail how the issues raised in the latter stages of the siting decision process will be resolved. In addition, the act commits the Federal Government to provide financial assistance to these governmental units which will enable them to responsibly participate in the siting process.

In all, the act sets forth dozens of explicit steps and envisions dozens more that must be followed before any waste repository becomes fully operational.

Clearly, progress has been achieved in the act's implementation. Equally clear, however, is the fact that this progress has been surrounded by much controversy, so much controversy, in fact, that the whole program is in danger of collapse, absent the will to make significant mid-course corrections.

This member, for one, does not pretend to have the answer, today, on what it will take to set the program right. Today's hearing is but the first in a series which we will be conducting over the next 2 to 3 months. Hopefully, however, the dialog that we start today, and will continue during the course of our subsequent hearings, will provide us with the answer to that question.

Indeed, in my judgment, a solution must be found for, just as in 1982, we must realize that our high-level radioactive waste problem is not going to disappear. We must quickly reevaluate the program and press ahead if we are to fulfill our obligation to the American people to protect their health and safety and that of our environment.

With those comments, I would recognize the Senator from Virginia.

OPENING STATEMENT OF HON. JOHN W. WARNER, U.S. SENATOR FROM THE STATE OF VIRGINIA

Senator **WARNER**. Thank you, Mr. Chairman. It is our understanding that the Secretary is only here for a brief time, so to accommodate the Chair and other members, I would propose to submit my opening statement for the record but observe that I support the Secretary's actions throughout this program.

You are endeavoring, I think, in a very conscientious way to resolve the very essential need for this Nation to find a safe and equitable means for which to dispose of nuclear waste. We are all concerned about the primary site and the first site selection and the safety considerations. But you made the right decision on the second site. We do not need it now and the taxpayers should not have the burden of having their dollars supporting a second site when there is clearly not that need.

It is for that reason that I put in a bill to affirm your Mission Plan in the Nuclear Waste Policy Act, which I think was a correct action.

Mr. Chairman, if I may have my full opening statement accepted for the record.

Senator **Breaux**. The Senator's statement will be put in the record.

[Senator Warner's statement follows:]

Opening Statement of Hon. John W. Warner, U.S. Senator From the State of Virginia

Mr. Secretary, I join my colleagues today in welcoming you to the Subcommittee's first hearing of the 100th Congress.

I have enjoyed working with you over the years on coal and other energy issues important to the economy of Virginia.

I look forward to continuing our working relationship through my assignment on this committee. This offer certainly stands for the program we are here today to discuss, the Department's implementation of the Nation's nuclear waste program.

Last May, I applauded your prudent decision to delay indefinitely the site specific work on a second repository. Evidence clearly indicates that one repository is technically capable of storing the estimated amount of waste to be generated in the near future. Such a delay, and I must add hopefully a permanent delay, is a wise use of ratepayers moneys which make up the contributions to the Nuclear Waste Fund.

Like some of my colleagues, I am disturbed by the Department's decision that, absent further Congressional action, the search for a second repository would soon resume.

Following this decision, it is my goal to give the Department the direction and authority they believe necessary to postpone that search, consistent with the findings contained in the Draft Amendment to the Mission Plan to the Nuclear Waste Policy Act released in January, 1987.

My legislation reaffirms the Department's May, 1986 decision and provides you, Mr. Secretary, with further flexibility over if or when a second repository is required to accommodate the disposal of our nuclear waste.

I trust that the Administration will support this bill.

Certainly the overriding issue is the safe operation of such a facility.

The Department must provide greater assurances to the three states under consideration for the first repository that public health is not at risk. I would welcome the Secretary's comments on the possibility of independent monitoring of the repository by the States or the Nuclear Regulatory Commission to mirror the Department's activities as one means of reassuring States of the safety of deep, underground storage.

Mr. Secretary, I stand ready to assist you in providing for the safe disposal of nuclear waste through the implementation of the Act and the Mission Plan. But, and I cannot state this strongly enough, I do not believe there is a need for a second repository.

Senator **Breaux**. I recognize the Senator from Maine.

OPENING STATEMENT OF HON. GEORGE J. MITCHELL, U.S. SENATOR FROM THE STATE OF MAINE

Senator **Mitchell**. Thank you very much, Mr. Chairman. I do have a brief statement I would like to make.

The disposal of high-level radioactive waste is one of our Nation's most serious and difficult problems. This waste demands the most careful handling to protect humans and the natural environment from the radioactivity that may last for tens of thousands of years. The issue has stirred strong feelings in every part of this country.

Resentment is widespread because American citizens believe their Government is moving forward with a program that in many ways makes no sense. We need to dispose of the high-level waste generated by the defense program and the spent fuel generated by commercial nuclear powerplants. And we must do so safely. That means we must choose the safest location for this highly radioactive waste.

But the Federal program, as it is now being implemented, is not choosing the safest method or the safest location. Some claim we should have a repository in the east, not because it is safe to do so but because much of the waste is generated there. Some claim we must have two repositories, not because we need two repositories but because no one wants one repository. So in order to have one, we must have two. The American people are right: this makes no sense.

Last May, in recognition of this folly, the Department of Energy decided to abandon the expensive and wasteful search for a second repository on the solid ground that since the repository is not needed, the search was not needed. That was a sound policy decision.

In January, the DOE released its Mission Plan Amendments in which the search for a second repository was postponed. Then folly returned. In oral statements before Congress, the officials of the Department of Energy claimed that they needed a signal of some sort from Congress that they made the right decision to postpone the search for a second repository, even though the law does not require any such signal and even though the Department of Energy has never before in this program sought such a signal.

Mr. Secretary, to you, this is my signal. I will do everything in my power to stop the Department of Energy from resuming the search for a site for a second repository. And I believe there are many Senators who feel the same way. A second site is unnecessary, as the Department of Energy has already said. Therefore, to search for a site that is not necessary would be a waste of money. I support the Department's decision to postpone the search for a second repository, because I believe it makes sense to do so.

In the State of Maine, there is widespread resentment over this program, because the two locations included by the department are manifestly and obviously unsuitable for a repository. One of them is on Sebago Lake, which is the source of drinking water for the largest city in Maine and much of the population in southern Maine and is a focal point for summer visitors. It is simply incredible that this could have been considered under any circumstances as a proper location for a repository.

Last month, the Maine Yankee Atomic Power Company, which operates a nuclear plant in our State, released a study on this site which leaves no doubt that this site should be disqualified from further consideration. The study concluded that contaminants released from repository depth may reach the surface in as little as

20 years. And the surface is the principal source of drinking water for much of the population of southern Maine.

The other site in Maine is also unsuitable. It is on Indian lands held in trust. It is almost directly adjacent to the border with Canada.

To quell the opposition that has arisen on this issue, it is time to return to a policy that makes sense. There are obviously no quick or easy solutions. There are, however, bad policies that can be avoided. It would be a bad policy for this country to insist that there cannot be one repository unless there are two, when it is obviously unnecessary to have two. It makes no sense for this country to spend billions of dollars to search for a site for a facility that the Department of Energy itself has concluded is unnecessary.

Therefore, Mr. Secretary, I know you have heard from those in the western part of the country and will hear from some here today, but I do want to say to you that there are very strong feelings on this subject in the eastern part of the United States, very strong feelings that a second facility is technically unnecessary, as you yourself have said. Therefore, to waste billions of dollars searching for a site or a facility that you have said is unnecessary, is wasteful and unwise.

Thank you, Mr. Chairman.

Senator **Breaux**. Thank you, Senator.

I recognize the distinguished former chairman of this subcommittee, the Senator from Wyoming.

OPENING STATEMENT OF HON. ALAN K. SIMPSON, U.S. SENATOR FROM THE STATE OF WYOMING

Senator **Simpson**. Thank you, Mr. Chairman. I commend you for your work here and your very ambitious agenda in the weeks to come. We have much to do, and you are really going to enjoy the chairmanship of this subcommittee. It is really a dazzler. The people come in and talk a lot, and yet the stuff just keeps stacking up.

If the people in America ever figure out that we have about 108 of these plants onstream and all they are doing is putting their spent fuel in pools, then, instead of going through this sage chicken dance where nobody wants the stuff, somebody better be paying attention. We had better get at our business.

It is a lot easier to come in here or come in anywhere and say we do not want it and go to the issues of hype and emotion with regard to it. We have it. Countries like Sweden and France dispose of it, and we do not. We talk about it an awful lot and we talk about the politics of the Secretary in his work and the politics of ours, and me too. I do not leave myself out. It is easy for me to say. You have not picked my State for a permanent geological repository. Maybe they will. I do not know. But that is not the point.

The point is, we have the stuff. We had a bill, which was pretty good. We are all painfully aware that this program is in serious trouble.

I am very pleased, Mr. Chairman, to see you there as we deal with this. We made a decision in regard to a second repository. Then the Secretary made another one that threw it into a tailspin and, in the process, destroyed a very delicate geographical balance that we tried awfully hard to achieve.

It is not John Herrington's fault that he got into politics, because we drove him to that. We all do it beautifully. But we violated the law, and we have a special, unique interest in this issue of a second repository.

We talk about transportation. The waste is generated in the east. I will bet we cannot get anything done in this country when we get to the transportation issue. We will not let it go through this State or that State, so what are you going to do with it if you do not have a repository near where it is. I do not want to put it in the granite States. I do not want to do one on somebody in this subcommittee.

But the issue is we have something to do, and we had best be about it. I think we are wasting a ton of money. They can do these things. Our characterization is going to cost $1 billion. Yet, over in Sweden, they can do the whole operation for $300 million.

The American public better be listening. But I hope they will not be goaded on by alarmists who will not let us get it done. I cannot blame the Secretary for the politics. As I say, we do it beautifully.

I look forward to serving with you, Mr. Chairman. It is going to be an adventure for you. I can tell you that. I will stay right here by your side as we do it, because we have to get with it and look into these issues of monitored retrievable storage and do some honest stuff with regard to it. I hope we can get it done.

Senator **Breaux**. Thank you, Senator, for your observations. I am an adventuresome person, so I look forward to doing it. The point you make is quite well taken. Whether it is garbage floating around on a barge in the Gulf of Mexico that no one wants, or toxic waste that no one wants buried in their State, or nuclear waste that no one wants to have located anywhere, the simple fact is we are still producing all of it. We had better find a way to dispose of it.

We have the distinguished Senator from New Hampshire who has joined us and is going to be sitting with us this morning. We welcome him to the committee.

With that, we have reached our first witness. We are plased to have the distinguished Senator from the State of Tennessee, Jim Sasser. Jim, welcome to the committee.

STATEMENT OF HON. JAMES R. SASSER, U.S. SENATOR FROM THE STATE OF TENNESSEE

Senator **Sasser**. Mr. Chairman, it is a pleasure for me to be here this morning before you and the distinguished members of this subcommittee. I want to commend you and the members of this committee for becoming directly involved in the debate on the Nuclear Waste Policy Act. Quite frankly, I welcome your involvement, because I think we need the fresh insight of this committee to sift through what I perceive to be the shambles of the Nuclear Waste Policy Act.

Let's make no mistake about it. The Nuclear Waste Policy Act is in ruins, and the distinguished Senator from Wyoming, I think, alluded to that in his opening statement. By emphasizing political expediency over scientific rigor, the Department of Energy has all but abandoned the Nuclear Waste Policy disposal system that was envisioned in the Nuclear Waste Policy Act.

The thrust of my remarks here this morning will center on the monitored retrievable storage facility that was originally a subsidiary element in the overall storage plan. With the mounting political controversy surrounding the location of the final repository, the MRS has become the Department of Energy's path of least political resistance. Based on what I perceive to be purely political motive, the Department of Energy has chosen the monitored retrievable storage site as its answer to this country's nuclear waste problems.

At the outset, Mr. Chairman, let me underscore the unity, in a bipartisan way, of my colleagues on the Tennessee congressional delegation on this very important point. It is the unanimous view of the Tennessee congressional delegation that the Department of Energy has failed to comply with the statutory guidelines called for in the act. In the light of that failure, we are uniformly and adamantly opposed to the monitored retrievable storage site alternative, especially since the MRS now appears to be the only part of the act that the Department of Energy intends to abide by.

Mr. Chairman, I would ask your consent that a copy of the letter from the members of the Tennessee congressional delegation to the Secretary of Energy, outlining our comments on the Department's Draft Mission Plan, be included in the hearing record.

Senator **BREAUX**. Without objection, it will be made part of the record. (See p. 12.)

Senator **SASSER**. I will also ask unanimous consent, Mr. Chairman, that a statement of my distinguished junior colleague, Senator Albert Gore Jr., be included in the record.

Senator **BREAUX**. Without objection, it will be included. (See p. 10.)

Senator **SASSER**. I would also like to ask, Mr. Chairman, that an excellent editorial, which appeared just yesterday in one of the prestigious newspapers in our State, The Nashville Tennessean, appear in the record. This editorial is entitled "DOE's Nuclear Waste Plan Looking Worse All the Time." (See p. 15.)

The Nashville Tennessean quite rightly argues that the Department of Energy is moving full speed ahead against the dictates of the Nuclear Waste Policy Act, without a clear plan, and toward an objective that is not consistent with the will of the Congress. The Department of Energy seems to be hell-bent on doing something, even if it is the wrong thing. And there is no question in my mind that the so-called MRS is indeed the wrong thing.

In fact, I think the Department of Energy's entire approach is wrong-headed. The Department, in effect, is throwing aside a well-balanced, well-reasoned approach to storing nuclear waste that was hammered out here in the Congress in exchange for a quick and dirty temporary MRS solution.

I submit to you, Mr. Chairman, and the distinguished members of this subcommittee, there is simply no need for this rush to judgment. In fact, the Nuclear Regulatory Commission has stated that spent fuel can be safety stored on site in water for at least 30 years beyond the expiration of a reactor's operating license. In addition to that, new dry storage technologies can also provide relatively inexpensive and potentially safer on-site storage.

Now, despite these compelling facts, the Department of Energy's latest Mission Plan pushes final repositories to the back burner in order to leap blindly to the MRS solution. I would submit to this committee, Mr. Chairman, that the Department of Energy is putting simple expediency ahead of the public interest.

The evidence of their haphazard approach, I think, is abundantly clear. Right now, the General Accounting Office is working on a study that points out the many shortcomings of the Department of Energy in developing the monitored retrievable storage site proposal.

The draft of this General Accounting Office report, which has not yet been released, concludes that the Department of Energy has not provided the Congress with an adequate basis on which to make an informed decision on whether the monitored retrievable storage site should be integrated into the overall nuclear waste management system. The Department of Energy is obligated by law to do that.

The draft goes on to state that the Department of Energy has not demonstrated that the so-called monitored retrievable storage site is needed to safely manage spent fuel. The report goes on to say that the Department of Energy has demonstrated that the benefits attributed to the so-called MRS could not be achieved through other means.

Specifically, the Draft General Accounting Office report is critical of the Department of Energy's interpretation of the act's MRS provisions. The act viewed the MRS only as a storage option that was to be studied. But the Department of Energy opted to ignore this language. It announced its intention to pursue a monitored retrievable storage site whose role would be waste preparation. That is something, Mr. Chairman, that is not even discussed in the act's MRS provisions.

Now, the General Accounting Office also points out that the costs of the MRS have not been fully developed by the Department of Energy. The latest price tag that the Department of Energy placed on the monitored retrievable storage site facility was between $1.6 billion and $2.6 billion. Yet this figure does not take into account payment in lieu of taxes, aid to local communities to mitigate the impact of constructing and operating the MRS, and other expenses. The General Accounting Office report indicates that these costs could be very, very substantial indeed.

The Department of Energy does not plan to even determine what these costs might be until after the Congress has approved the MRS proposal. In other words, we are being asked to buy a pig in a poke with the MRS proposal, at this juncture.

The act also requires the Department of Energy to conduct a detailed study of the for and feasibility of a monitored retrievable storage facility in the first place. The Department of Energy has failed miserably here.

The Nuclear Regulatory Commission, which was directed to play a role in developing the need analysis, offered only cursory treatment on the issue of the overall need for an MRS. In fact, the Nuclear Regulator Commission indicated that it was neutral on the whole subject.

So the need for and feasibility of an MRS has not been proven. The Congress has not even been given the information by the Department of Energy on which to make an educated judgment.

The need and feasibility issues are further compromised by the Department's failure to fully consider potential alternatives. Alternatives such as on-site storage were not developed, nor was much study given to alternative waste transportation systems. Furthermore, when the Department of Energy did consider alternatives, they treated each option as though it existed in a vacuum. No effort was made to determine the net effect of all options combined on the operation of the waste management system.

In sum, then, Mr. Chairman, I would say to you and my distinguished colleagues on this subcommittee that we are looking at the prospect of paying an indeterminate amount of money for a facility whose need has not been adequately proven as required by law.

Mr. Chairman, we should not endorse this kind of ad hoc tinkering with the Nuclear Waste Policy Act. The easiest political path is not necessarily the right path for this country and is not necessarily good public policy. We must take the time to implement a solution that does what the Nuclear Waste Policy Act intended to do; and that is to provide a safe, balanced, technologically sound and fully researched waste disposal plan.

Mr. Chairman, I thank you for allowing me the privilege of appearing here this morning before you and the distinguished members of this subcommittee.

[The material submitted for the record by Senator Sasser follows:]

Testimony submitted to the
Subcommittee on Nuclear Regulation of the
Senate Environment and Public Works Committee
Albert Gore Jr.
April 23, 1987

I would like to thank the Chairman for allowing me to submit testimony to the Committee on the important issue of our nuclear waste disposal program. Specifically, I would like to discuss the question of whether we need a monitored retrievable storage system or could our goals be better met by other alternatives, such as on-site storage until a permanent repository is ready?

The Nuclear Waste Policy Act requires that "the Secretary shall complete a detailed study of the need for and feasibility of, and shall submit to the Congress a proposal for, the construction of . . . monitored retrievable storage facilities." The Congress is now embarking on this discussion of the MRS. The question of "need" is the one that must be most thoroughly explored before an MRS is authorized and funded. Not only is there doubt about the need for pre-packaging spent fuel, there is also doubt about whether a facility expressly dedicated to re-packaging is either prudent or necessary.

I will not accept a justification of the "need" of the MRS based on DOE's inability to meet the Act's deadlines for the completion of a permanent repository. This road leads to a de-facto final repository in Oak Ridge, Tennessee. Tennesseans are not reassured by the Department of Energy's statements that the capacity of the MRS would be limited and that the MRS would not open until construction authorization of the permanent repository. In the past, DOE has seen fit to re-interpret the Nuclear Waste Policy Act. I understand that this Committee has asked the Secretary of Energy to be prepared today to discuss the Department's understanding of the Act, especially the sections pertaining to MRS. I hope that we will hear how the Department intends to comply with the law, rather than further re-interpretations.

I will do everything possible to stop DOE's efforts to turn the MRS into a quick fix political solution to the real problem of final nuclear waste storage. In the coming months when this Committee takes up the discussion of DOE's proposal for a monitored retrievable storage facility, I look forward to actively participating.

Congress of the United States
Washington, DC 20515

March 25, 1987

John S. Herrington
Secretary
U.S. Department of Energy
Washington, D.C. 20585

Dear Mr. Secretary:

This letter is in response to the Department of Energy's Draft Mission Plan Amendment, submitted for public review on January 29, 1987. The Amendment contains:

* a decision by DOE to delay for five years the first repository authorized by Congress in the Nuclear Waste Policy Act of 1982.

* a decision to postpone indefinitely site-specific work on the second repository authorized in the Act.

It is our view that these decisions constitute a refusal by DOE to comply with clear statutory requirements contained in the NWPA. The Department has acted here beyond its legal authority, and this we condemn.

We believe it is appropriate for the Department to recommend changes in the law. However, such recommendations should be made to Congress as formal proposals to amend the Act - not as decisions by DOE to ignore the law. We therefore request that you withdraw this Mission Plan Amendment and seek any changes in the NWPA through proper legislative channels.

If you choose to proceed along your present course, we would stress that the absence of Congressional action on the Amendment should not be construed as approval. In this case, legislative silence does not mean consent.

We are especially concerned about the implications in the draft Amendment for the Monitored Retrievable Storage (MRS) facility proposed for construction in Tennessee. The proposed five-year "extension" of the date for a first repository, and the proposed "postponement" of site-specific work on a second repository create an unwarranted and false sense of pressure to build a MRS facility. Your failure to meet your own deadlines does not strengthen your case for MRS. Furthermore, we believe that the need for a MRS facility in the waste-management network has not been conclusively established.

The Amendment attempts to establish a need for the MRS facility on the basis of a contractual obligation for DOE to begin accepting high-level nuclear waste in early 1998. The proposal states:

> "The above-mentioned contract provides for the DOE's acquisition of title to spent nuclear fuel and high-level waste, transportation, and subsequent disposal. Under the contract, these services are to be provided 'after commencement of facility operations, not later than January 31, 1998.' Table F-1 shows an illustrative schedule that is consistent with that requirement and reflects the DOE's current plans for the development of the improved-performance waste-management system."

The Department maintains that this contractual obligation could be fulfilled by accepting high-level waste at a MRS facility. Indeed, the draft Amendment suggests that storing high-level waste at the MRS facility would be necessary, given the proposed delay in constructing a first repository. However, we do not believe that accepting high-level waste for storage at a MRS facility would fulfill the obligation to begin disposal of waste by January 31, 1998.

Section 302(a)(5)(b) of the Act states that under contracts entered into with utilities "the Secretary, beginning not later than January 31, 1998, will dispose of the high-level radioactive waste or spent nuclear fuel involved as provided by this subtitle." "Disposal" is defined in Section 2(9) to mean "the emplacement in a repository of high-level waste, spent nuclear fuel, or other highly radioactive material with no foreseeable intent of recovery, whether or not such implacement permits the recovery of such waste." Clearly then, the acceptance of waste for storage at a MRS facility would not fulfill the Act's definition of "disposal." The MRS should not be considered an option that would meet the Department's statutory obligation.

Under Section 141 of the Act, Congress shall make the final determination of the possible need for a MRS facility. We strongly object to the DOE's efforts to seek funds for construction of a MRS facility without first obtaining the specific authorization required by the NWPA. We emphasize that construction of a MRS facility is not authorized by the NWPA, and any development of the concept beyond submittal of the proposal to the Congress will require further Congressional authorization. We object to the Department's efforts to skirt the Congressional review process when requesting funding for the construction of the MRS facility.

An overwhelming majority of Tennesseans are opposed to the Department's MRS proposal. They are opposed for a variety of reasons, ranging from the impact such a facility would have on our state's reputation to concerns about the hazards of transporting spent fuel rods. Consequently, we believe that before you proceed further with your proposal, alternatives must be thoroughly explored.

We ask that this letter be included in the public comments document accompanying the Mission Plan Amendment if it is submitted to the Congress.

Sincerely,

Jim Sasser
Jim Sasser
United States Senator

Albert Gore Jr.
Albert Gore, Jr.
United States Senator

James H. Quillen
Member of Congress

John Duncan
Member of Congress

Marilyn Lloyd
Member of Congress

Jim Cooper
Jim Cooper
Member of Congress

Bill Boner
Bill Boner
Member of Congress

Bart Gordon
Member of Congress

Don Sundquist
Don Sundquist
Member of Congress

Ed Jones
Ed Jones
Member of Congress

Harold Ford
Member of Congress

[From the Nashville Tennessean, Apr. 22, 1981]

DOE'S NUCLEAR WASTE PLAN LOOKING WORSE ALL THE TIME

Some people may be beginning to understand why the federal Department of Energy failed to consult with Tennessee officials on its plan to build a nuclear waste dump at Oak Ridge.

It is becoming apparent that the DOE has never had a coherent plan to dispose of the waste from the nation's nuclear power plants and doesn't have a plan now. The agency was just given a mandate by Congress several years ago to begin disposal of spent nuclear fuel by 1998, and the DOE has been frantically running around ever since trying to force the waste problem on people who don't want it.

The original plan was to make a permanent dump in the wide open spaces of some western state. But that has proved to be a political bomb, and the DOE still has not found a place to put the permanent dump.

But in the meantime, with the 1998 deadline getting closer, the DOE came up with the idea of fixing a place to put the waste "temporarily" until the permanent dump could be established. And Oak Ridge, Tenn., was just the place for it. The people there were already wading around in nuclear material and a little more wouldn't hurt. And, besides, the DOE apparently thought, the state wouldn't have enough political power to keep the dump out.

The DOE calls the proposed Oak Ridge facility a Monitored Retrievable Storage (MRS) facility. But that is just a fancy name for a dump, which may become permanent.

The DOE's plans for the MRS at Oak Ridge are continuously changing, and every time there is a change it gets worse for Tennessee and Tennesseans.

Two years ago the DOE said the MRS would operate 26 years, cost $700 million to construct and would only get waste from nuclear plants east of the Rocky Mountains.

But the plan which the DOE sent to Congress last month calls for the MRS to operate at least 31 years, cost $710 million (which would be only a fraction of the total cost of the facility) and could receive waste from plants west of the Rockies.

It is clear that the DOE's plans for Tennessee are dependent on spur-of-the-moment thinking. The Agency is having to answer questions from nuclear power managers as to what it is going to do with all that waste which is building up in plants all across the country.

The DOE apparently doesn't know, and all it can say is, "Bring it all down to Tennessee, boys, and we'll dump it down there until we can figure out what to do with it."

Congress should not approve of this kind of shoddy planning. The nation's nuclear waste should be disposed of without frequent handling and unnecessary transportation across the country. Probably the best plan would be to let each plant dispose of its own waste. Congress should reject the ludicrous MRS proposal and require the DOE to come up with a more economical and sensible plan.

Senator **BREAUX**. Thank you very much, Senator, for your comments. I want to ask you, Jim: There are some who say the act requires the Secretary to come up with an MRS, that is already law; they merely have to carry out the law and that is what Congress told them to do.

Senator **SASSER**. Mr. Chairman, that is not our reading of the law, and we have read it very, very carefully. The law gives the Secretary the option of recommending an MRS. The option is then up to the Congress as to whether or not it will be approved. The law also requires the Department of Energy to provide a justification for the monitored retrievable storage site, which has not been done in this particular instance.

The General Accounting Office report, which will be released soon and to which I alluded, indicates that the Department of Energy has not lived up to the requirements of the act in providing the Congress with adequate information to make a judgment as to whether or not an MRS is justified.

Additionally, the act requires that the Nuclear Regulatory Commission play a substantial role in determining whether or not an MRS is justified. That has not been done in this case either.

What we are seeing here, Mr. Chairman, is the Department of Energy, pushing in this direction, finding a resistance to the final repository. Pushing in the other direction, they find a resistance to a final repository. So what do they do? The path of least political resistance is to come up with a temporary monitored retrievable storage site; but to construct that monitored retrievable storage site in such a way that it can be expanded to become a permanent repository at a later date. That is what we are confronted with here.

This Department of Energy is seeking, I think by subterfuge, to put a final nuclear repository in one of the most heavily populated, most beautiful areas of this country. That is, in Oak Ridge, Tennessee. And I think that is absolute nonsense.

Senator BREAUX. Thank you very much.

Are there any other questions for our colleague?

Senator MITCHELL. I have no questions. Thank you.

Senator BREAUX. Thank you, Jim, very much.

Senator SASSER. Thank you.

Senator BREAUX. We would like at this time to welcome the distinguished Secretary of the Department of Energy.

Mr. Secretary, we welcome you. Your statement is extensive. I would hope that you would be prepared to summarize it so we may proceed to questions.

STATEMENT OF HON. JOHN S. HERRINGTON, SECRETARY, DEPARTMENT OF ENERGY, ACCOMPANIED BY BEN C. RUSCHE, DIRECTOR, OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

Secretary HERRINGTON. Thank you, Mr. Chairman. I will summarize briefly.

I appreciate the opportunity to appear before you today. With me is Ben Rusche, who is the Director of the Office of Civilian Radioactive Waste Management and who is well known to many of you. In response to the letter of invitation, as you have indicated, we prepared a lengthy statement and submitted it for the record along with detailed tables.

There have been major achievements in the Waste Management Program called for in the Nuclear Waste Policy Act of 1982, particularly in the past year. Most notably, last May I recommended, and the President approved, three sites for characterization as candidates for the nation's first geological repository for spent nuclear fuel and high-level radioactive waste.

At that time, I also announced that based on a number of factors that we can discuss today, including the declining projections of the rates at which spent nuclear fuel will be discharged from commercial reactors, progress in siting the first repository, and good fiscal management, it would be prudent to postpone the site-specific activities for the second repository.

In January, we issued a draft amendment to the Mission Plan for the Civilian Radioactive Waste Management Program. The Mission Plan is intended to keep the Congress fully informed of the progress in the program, and the draft amendment was prepared to discuss significant developments. The draft amendment was sent for comment to the States, to the affected Indian Tribes, the Nuclear Regulatory Commission and to other Federal agencies. It has been made available for public inspection, and sent to Members of Congress.

After review of the comments received on the draft, we will revise the amendment in response to the comments as appropriate, and will submit it formally to Congress for information and direction. We expect this to occur early this summer and to formally seek congressional action on the proposed revisions.

The draft Mission Plan Amendment addresses the following major points: (1) significant achievements in the Waste Management Program; (2) a 5-year extension from 1998 to 2003 to begin acceptance of waste at the first repository; (3) postponement of site-specific work regarding the second repository; and (4) a proposal to Congress for construction of MRS.

If no action is taken by the Congress, we will continue with the first repository program to try to meet the 1998 deadline to accept waste. Our experience to date has indicated that more time has been needed and is needed for consultation and interaction with the States and with the affected Indian Tribes. In addition, if no action is taken by Congress to approve the amendment to our Mission Plan, we will return to a search for specific sites for a second repository at the end of this summer.

I would like to briefly summarize the status of the program. First, with the President's approval of the recommendation of the three sites, characterization has begun. The three candidate sites are Yucca Mountain in Nevada, Deaf Smith in Texas, and the Hanford site in Washington State. Site characterization, in our estimation, will take between 5 to 7 years, depending on the particular site.

Although we had planned to begin exploratory shaft construction at one or two of the sites in this fiscal year, Congress, in the appropriation for the waste program in fiscal year 1987, specified that no funds are to be used for drilling any exploratory shaft at any site in fiscal year 1987. Congress did allow, however, for site-specific work other than exploratory shaft drilling, and that work will be proceeding.

In the second repository program, following the announcement of the President's approval of the three sites for characterization as candidates for the first repository, we assessed the timing of our activities and the candidates for the second repository. Since that decision, with the development of the draft Mission Plan Amendment, many issues have been raised and much discussion has taken place.

I want to clarify one point in regard to our decision on the second repository. I have stated that indefinite postponement does not mean cancellation. The Department of Energy has not abandoned a second repository, as you have heard this morning already. The Department of Energy remains fully committed to carrying on a two-repository system to carry out the intent of Congress.

When making the announcement, I thought, based on the factors, it was appropriate to leave a specific time line for site-specific work open-ended, somewhere in the mid-1990's to 2006.

To clarify our intent and for planning purposes, I have included in Table 6 of my formal statement a revised preliminary time line for milestones. The overall schedule has changed many times since passage of the Act and as we progress through development of the first repository. I would suspect that additional adjustments may be appropriate from time to time. In the meantime, our current activities are focusing on non-site-specific work for the second repository.

As stated in the draft Mission Plan Amendment, we believe that a Monitored Retrievable Storage facility should be an integral part of the waste management system. We were legally enjoined from submitting the MRS proposal to Congress for more than a year. A Supreme Court ruling allowed us to submit that proposal on March 31, 1987. As described in the proposal, an MRS would substantially enhance the waste management system capabilities and would provide for greater assurance that we could begin receiving waste in 1998.

I believe that the MRS, centrally located, would help us a great deal. In the proposal, we recommend to Congress the following: (1) approve the construction of an MRS facility at Clinch River and Oak Ridge, Tennessee; (2) limit the storage capacity at the MRS facility to 15,000 metric tons of spent fuel which would, to a great deal, address Senator Sasser's objections; (3) preclude waste acceptance at MRS until construction is authorized for the first repository and approval is received by the NRC, further guaranteeing that Senator Sasser's concerns would be met; (4) direct the Department of Energy to implement measures responsive to the concerns and recommendations of the State and local governments; and finally, direct DOE to implement the program plan which accompanied the proposal: complete construction of the MRS within ten years of congressional approval.

In conclusion, Mr. Chairman, I am hopeful that Congress will (1) approve our 5-year extension for the operation of the first repository, as set forth in the draft Mission Plan Amendment; (2) approve the postponement for site-specific work on the second repository discussed in the Mission Plan; and (3) approve the MRS facility.

This concludes my brief remarks, Mr. Chairman. I have previously requested the committee to excuse me early because of a prior commitment. I think there is no more important issue than this particular waste issue, and I will abide by the courtesy of the committee. However, if possible, I would like to be excused early and let Mr. Rusche finish with the questioning and appear at another date at the Chairman's discretion. Thank you, sir, very much.

Senator **Breaux**. We agree that this issue is of such incredible importance, we would like to be able to make sure that we get all of our questions in.

We have received, Mr. Secretary, the monitored retrievable storage submission to the Congress, the MRS, and it is entitled The Proposal. I note that it is not in the form of legislation or a draft bill or anything of that nature. In your opinion, does the Congress have to enact specific legislation in order to enact this proposal, or is this in fact a proposal for legislative submission, or are we expected to receive one in the future?

Secretary HERRINGTON. For MRS, it is our position you have to enact specific legislation.

Senator BREAUX. We do have to?

Secretary HERRINGTON. Yes, sir.

Senator BREAUX. In any particular form? Are we supposed to be getting a bill sent by the Administration for the proposal?

Secretary HERRINGTON. Let me have Mr. Rusche answer that question.

Mr. RUSCHE. Mr. Chairman, section 141 of the Act directed us to submit a proposal to Congress. We were attempting to be faithful to that direction. Obviously, if there is a need for legislative language, we would be glad to participate, but we did not want to presume on the Congress in that sense.

Senator BREAUX. I would suggest that, if that is the opinion of the Department, you should have your people start drafting something that this committee could look at.

I take it from what I am hearing in the statement, Mr. Secretary, that we are talking about the first repository slipping to completion somewhere in 1998 to the year 2003, is that correct?

Secretary HERRINGTON. We think 5-year slippage on the first repository would reflect what has happened and be a more realistic date. We have had extensive public input. The process is much more complicated than I think Congress or we originally anticipated.

Senator BREAUX. That would put the first repository ready to receive waste at what date?

Secretary HERRINGTON. I think we are estimating 2003.

Senator BREAUX. So you have a problem.

Secretary HERRINGTON. Yes.

Senator BREAUX. Because you have become the owner of a lot of nuclear waste in the year 1998.

Secretary HERRINGTON. Yes, sir.

Senator BREAUX. So your answer to that problem is to have the MRS in place.

Secretary HERRINGTON. Let me modify a little bit. It potentially is a problem. We could become the owner of a lot of waste in 1998. We are certainly committed to begin accepting it in 1998. But whether we do or do not begin accepting in 1998, I think is still an open question. The Department is committed to it.

Senator BREAUX. Under the law do you not have to accept it and dispose of it?

Secretary HERRINGTON. I think there is a conflict on this particular point of whether we can accept it at an MRS facility or have to accept it on the permanent site, as established.

Senator BREAUX. What is the position of the Department? It seems like the statute says you have to accept it and dispose of it.

Secretary HERRINGTON. Obviously, there are a lot of lawyers looking at it. The lawyers say that we can accept it at an MRS facility and that will comply with the Act.

Senator BREAUX. Whose lawyers are they, yours?

Secretary HERRINGTON. Yes, sir.

Also, other obviously interested parties would like to see it.

Senator **Breaux**. Does the statute not specifically say accept and dispose of it? You are not trying to make the argument that accepting it in a Monitored Retrievable Storage Program equals disposal of the waste.

Secretary **Herrington**. No, I do not think that is our argument. But accepting it for disposal, I think, is our position.

Senator **Breaux**. Does the act require a second repository site?

Secretary **Herrington**. Yes, sir, we believe it does.

Senator **Breaux**. Give me some discussion as to why it was postponed indefinitely. You speak about these external considerations. I thought Congress was supposed to deal with the external considerations when they drafted the law, which says: build a second site.

Secretary **Herrington**. I think that is a correct interpretation of the Act, and we have not walked away from that. You have heard this morning that DOE arbitrarily and capriciously violated the law, that we moved away from the second site. I want to clarify what we did. The wording has not changed through the whole thing. The words I used, and they were carefully used, were: we would postpone site-specific work indefinitely on the second repository. After all, the second repository, although required in the law, has not been approved or authorized. That is a big difference between the first repository and the second.

Two factors came up, in my estimation, that were determinative of that decision, and we have not moved in a direction to change irrevocably the decision. The number one decision factor is this: the first site is limited to 70,000 metric tons of spent fuel accumulating under the time frame that was originally set forth by Congress when they made the decision for two sites. Since we have had no new nuclear reactors ordered in this country since 1978, it is our estimate that we will not reach 70,000 metric tons until the year 2020, 2023.

Senator **Breaux**. Is that based on the use of an MRS in addition to the first repository?

Secretary **Herrington**. No, it is not. Mr. Rusche says we have not used the MRS. I think that is correct.

The original plan was to go forward and pick the second repository, figuring that there would be 70,000 metric tons for the first site almost immediately. It takes, in our estimation, about 20 years to build a second site. If you work back from 2023, it is pretty obvious that if you started construction in the year 2003, you could have a second site ready.

That raises several other factors. (1) How much money can we save by pushing the decision on a second site into the mid-1990's or into the first part of the next century? The estimates are about $900 million.

(2) How can we benefit in the way of new technology and things we learn in building that first site and drilling those shafts in the ground and going through those water tables? What benefit can we get in the second site that is transferrable from the technology in the first site?

To me, as a manager of the program, it makes sense, if you are not forced to do site-specific work for a second site, to build the first site, while not cancelling the second site, then see what you have got; then move to the establishment of a second site at a later date when you are required to based on need. To me, that makes good sense.

That decision has caused a lot of furor because of what has been described as a delicate political compromise that was reached. We recognize that the law requires us to site a second site. So what we have done is put this proposal in formal words and sent it to Congress. We have asked you to approve what we think is good business management; we want that approved, if Congress does not however, we will proceed with the second site.

Senator WARNER. Mr. Secretary, you have not as yet sent it to Congress. You still have it out for comment, I think.

Secretary HERRINGTON. It was sent out for comment, yes, sir. You have draft copies, but you do not have it yet for formal action.

Senator WARNER. Let's be correct on that. It is not here yet. I have introduced a bill which embraces, I think, the basic elements, and I will take that up.

Senator BREAUX. The Senator is absolutely correct.

Thank you, Mr. Secretary.

Does the Senator from Wyoming have any questions?

Senator SIMPSON. Thank you, Mr. Chairman.

The tough part for me, John, is it seems to me that we are not in compliance with the requirements of the Nuclear Waste Policy Act, even though we speak of the fact that the date is coming at which time you will be having to make a decision. But meanwhile, nothing is happening to help to meet that decision, as I see it. And that is distressing to me, and then the use of the Mission Plan, which is a novel approach here, and our approval so the indefinite postponement of that second repository can take place.

But let me ask you this. Do you have a second repository program in place today that is being carried out and funded in good faith in a manner that will enable you to recommend three candidate sites for a second repository by July 1, 1989, as is a requirement of the Nuclear Waste Policy Act?

Secretary HERRINGTON. We have a good program done in good faith under way, funded at the level of $25 million. Is it such a program that will allow us to deliver two sites or three candidate sites by the date you specified? I would say no. But even if we had continued with site-specific work, I doubt if we could have met that deadline.

It is a non-site-specific work program that we are carrying out today. We are looking at crystalline rock. We are also looking at methods of disposal on an international basis. We are looking at general technology. We are not looking at any particular State for the second site.

If Congress does not approve this Mission Plan or authorize us to proceed along this course, then we will have to go back to site-specific work under the law, probably in September.

Senator SIMPSON. It seems to me that we are at least in violation in spirit, if not in the letter, of the law as I remember it as we passed it.

Let me ask you this question. Based upon what we know today about these four geological media, tuff, salt, basalt, granite, can the Department definitely state which is the preferred geological medium?

Secretary **Herrington**. No.

Senator **Simpson**. Then how can we say definitely that granite is less desirable from a geological standpoint than any of the other three?

Secretary **Herrington**. I would like Mr. Rusche to address the technology on the particular medium.

Mr. **Rusche**. Senator, the program, as outlined in the Act, pretty clearly specified that we look at sites for the first repository for which work was already in hand. The objective of the program is to find a site that is suitable as defined by the requirements of the Nuclear Regulatory Commission and the Environmental Protection Agency.

The objective then, to meet the time schedule that was outlined in the Act for the first repository, was to take advantage of that work that had been previously done over the last several years. We cannot, at this stage, rank the four media that you talked about. We are, however, confident that all four of the media, certainly all three of the media that we have identified for the first repository, will be found acceptable.

Of course, the proof of that depends on the execution of the characterization program. If we got to a second site, if that is the will of the Congress, as it remains that from the Act, then crystalline rock would be introduced for consideration for a second repository.

If I may say so, remember that the Act does not require that the four media, whether it is crystalline or whatever, be sampled for a second repository. In fact, those media that are considered for the first repository, under certain circumstances, would be valid candidates for a second repository.

Senator **Simpson**. I will submit some questions on that, because we have such a short time for the rest of the members. One other is this issue of transportation, because I think this is really a key.

I gather from reviewing your MRS proposal that transportation is a significant advantage in favor of building an MRS, and the total transportation miles would then be reduced. Yet in your guidelines for the selection of a repository, you only treat the local transportation impacts on this issue and do not consider the fact we will be transporting these wastes clear across the United States for disposal in the west. That is the way it is. I do not know how you avoid that.

If transportation is such a significant factor for an MRS, why does that not also suggest that we ought to be looking at granite locations in the east for a repository? In fact, if I understand your guidelines, you do not even consider proximity of the waste source for location of the first repository. Why is that?

There are now two bills in the United States Senate on transportation, and a whole bale of them in the House, to lock in an inability to transport high-level nuclear waste. What are we going to do about that?

Mr. **Rusche**. Senator, the first objective for siting the first repository is to meet the safety and health requirements. The siting guidelines which you correctly stated, do not consider general geographic location as a first parameter of selection, but rather focus attention on the geologic properties of the sites.

In conjunction with that focus, the Congress directed in the act that we attempt to meet a schedule, which we are attempting to meet. Therefore, we were virtually directed to look at sites for which there had been work done.

Transportation is an important issue, whether the sites are located in the east or in the west, but it is clear that we must place first attention on meeting an acceptable set of safety standards. That is what drove us in the direction that we went with respect to the first repository ensemble of sites to consider. Does that help?

Senator SIMPSON. I do not see how that promotes the public health and safety to generate the waste in the east and haul it around the United States to the west. I do not see quite how that works. That will get pretty emotional.

Senator BREAUX. The time of the Senator has expired. We are going to try limit the questioning to five minutes each and, Senator, you used about six minutes.

The Senator from Maine.

Senator MITCHELL. Thank you.

Mr. Secretary, when you announced your decision last May to indefinitely postpone site-specific work for a second repository, you were asked this question: Would you not need congressional ratification on your decision to suspend site-specific work on the second repository? You responded then: No, there is no site-specific work going on at this time; we also had lawyers look at it very carefully; we had a good input of information at this point.

Today you have taken a position directly to the contrary. What has occurred since last May to cause you to reverse your position?

Secretary HERRINGTON. I think I was wrong.

Senator MITCHELL. That does not give us much assurance as to your current position then.

Secondly, in January of this year you testified before the Energy Committee. You were asked whether an amendment should be presented. You opposed an amendment then. You stated in testimony before the Energy Committee, quote,

> If we were to open up the Nuclear Waste Policy Act to debate again for amendments, to me, that would be the end of the program.

Today you have taken a position which is directly contrary to that. What has caused you to reverse your position?

Secretary HERRINGTON. No, I have not reversed that position. I still feel that opening up the Act for amendments would be fatal. That is the reason we chose to do it through the Mission Plan Amendment rather than propose an amendment to the Act.

I believe that if the Congress has the ability to approve our Mission Plan, then we will still be in compliance with the Act. If Congress does not approve our Mission Plan, and we need an affirmative approval, then we have to go back to the original Act. I still would not like to see this Act opened up.

Senator MITCHELL. You are drawing the legal distinction between passing legislation to implement the Mission Plan on the one hand and an amendment to the Waste Policy Act on the other hand?

Secretary HERRINGTON. We are not asking for an amendment to the Act. We have submitted a draft Mission Plan Amendment for comment, and we will bring it to Congress. We are asking the Congress to approve our Mission Plan Amendment, and the form that takes, through Appropriations or any other way, would be up to Congress.

Senator MITCHELL. I suggest to you that is a totally semantic difference with no substance, really.

You said twice today that unless Congress acts legislatively to approve the Mission Plan, you would then resume the second search site by the end of the summer or by September. Yet in a letter to the Chairman of the House subcommittee of jurisdiction you said you would not have such legislation ready for submission to the Congress until June.

So you are going to present Congress with proposed legislation in June and say that unless we pass it by the end of summer, you will be forced to resume the second search site.

Have you not imposed upon us a truly impossible time limit on an issue of such complexity and controversity? How can you possibly expect the Congress to act within a period of really just a few weeks during the summer when the Congress will be out of session on the 4th of July, will be out of session the entire month of August? How can you possibly expect that to occur?

Secretary HERRINGTON. I am pretty sure that the Mission Plan Amendment is well known. There are a number of amendments that have been proposed at this point.

Senator WARNER. Excuse me. You say amendments proposed? You have to be technically correct, Mr. Secretary.

Secretary HERRINGTON. I am sorry. My term was off on that. There are a number of new bills that have been proposed at this time. I do want to be technically correct on that.

It is my understanding that most of the interested parties are familiar with the Mission Plan Amendment and that there is considerable work being done on it now.

Senator MITCHELL. But familiarity with an issue and getting a bill and being forced to pass it in a 2-month period during most of which the Congress will not be in session is, in effect, a prejudgment of the issue on your part. I submit that it is totally unrealistic to expect that.

I know my time is limited. I want to make one further comment here, which is very important, in response to a question by Senator Preaux. He asked you: Does the act require a second site? You answered, yes.

I think we should make clear that the act—and I now read it—says: "the Secretary hereby is authorized to construct one repository." You are directed to look for a second site, but you have no legal authority to construct a second repository. You are required to construct one repository. In order for there to be a second repository constructed, an additional act of Congress, an affirmative act of Congress, would be required. Is that not correct?

Secretary HERRINGTON. That is correct, sir.

Senator MITCHELL. Is it not correct that the limit of 70,000 tons on the total amount to be placed in the first repository is not a technical necessity? That is, is it not correct that a single repository could accommodate more than 70,000 tons?

Secretary HERRINGTON. Yes, sir.

Senator **Mitchell**. So the 70,000-ton limit was in fact a political decision by the Congress unrelated to the science.

Secretary **Herrington**. It was a legal limitation placed in the law. I do not know what bill that was.

Senator **Mitchell**. I will put it another way. There was no scientific basis for requiring a limit of 70,000 tons, is that not correct?

Secretary **Herrington**. That is correct.

Senator **Mitchell**. There would be no scientific or technical impediment to the Department placing more than 70,000 tons in a single repository but for this legal requirement that we have just discussed.

Secretary **Herrington**. We would have to look at that, but I assume that is correct.

Senator **Mitchell**. That is correct, right.

My time is up. I will have another round. Thank you.

Thank you, Mr. Chairman.

Senator **Breaux**. The Senator from Virginia.

Senator **Warner**. Thank you, Mr. Chairman.

Mr. Secretary, you gave the reasons this morning why it is not in the interests of the United States to proceed now to expend taxpayers' dollars for the development of a second site. Our distinguished colleague, Mr. Mitchell, has very clearly addressed the law and how it requires a future affirmative act by the Congress for the second site.

But my attention is drawn to the fact that you, I think, quite clearly have said we, the United States, can learn from the development of a first site how best to develop a second site. It could well be that we are pushing the state of the art in terms of worldwide disposal in our plan on the development of the first site. Is that not correct?

Secretary **Herrington**. That is correct.

Senator **Warner**. And in doing so, frankly, we could make a mistake. We make them all the time in military programs and in other programs. If we were to make a mistake in the construction of the first site and then duplicate it in the second, we would be in a very serious situation, would we not?

Secretary **Herrington**. I agree with that.

Senator **Warner**. Could you confirm or elaborate on the potential for making mistakes, since we are pushing the state of the art in the first place?

Secretary **Herrington**. I think it is hard to forsee what mistakes might occur. It is obviously something we would have to learn. But you can say one thing for certain: we definitely would learn better construction techniques. We know that from every Government project we go into, that you can learn from doing one thing when you do something else. We have seen it over and over again. I think it would be a wise economical move as well as having a firm technical basis.

Senator **Warner**. Particularly because we are doing it differently than, say, France and Sweden and other nations. We are going deeper and we are pushing the state of the art, technically.

This draws me back to Senator Mitchell's questions. You are now looking at the Mission Plan comments. What is your next step?

Are you going to send to Congress a recommendation that we adopt the Mission Plan? Will that be in the form of a piece of legislation?

I ask this question because you are aware of my bill which embraces, so far as I could, the technical aspects, and otherwise, of your Mission Plan. I recognize, as does Senator Mitchell, that if the Congress is going to act before you start in September, we have got to start moving and we have got to have a bill.

So my first specific question is: When do you propose to complete your work on the Mission Plan and forward to Congress a proposal?

Secretary HERRINGTON. June is the date, but the point that did not come up in the previous question is that we have had the draft Mission Plan Amendment on the Hill since January. So I do not think it is a surprise to anyone.

Senator WARNER. No, it is not, and indeed, as I say, my bill embraces that. In other words, would you endorse going forward with my bill at this time? Is that a realistic vehicle, to begin to address this question?

Secretary HERRINGTON. Yes, I think it is.

Senator WARNER. So far as I know, in the drafting of my bill I carefully did it in a manner not to amend the Nuclear Waste Policy Act. Do you agree that the bill as drafted does not amend that act?

Secretary HERRINGTON. Yes.

Senator WARNER. Mr. Chairman, thank you.

Senator BREAUX. Thank you.

The Senator from Nevada.

Senator REID. Thank you very much, Mr. Chairman. I apologize for being late.

I have, with the Chairman's permission, a statement I would like to read and then a couple of questions, if time permits. Otherwise I will wait for my turn.

Senator BREAUX. Certainly.

OPENING STATEMENT OF HON. HARRY REID, U.S. SENATOR FROM THE STATE OF NEVADA

Senator REID. Mr. Chairman, I want to welcome the Secretary here. It has been my contention all along that site selection process for this Nation's first high-level nuclear waste repository is flawed, and I have expressed that personally to the Secretary.

Although this is the first time I have outlined my concerns about the implementation of the 1982 Nuclear Waste Policy Act before this subcommittee, it is not the first time I have made my feelings known before other congressional subcommittees and committees. In fact, I have done it numerous times. During the 99th Congress, for example, I testified on several occasions before various committees in the House of Representatives and the Senate which have jurisdiction over the Nuclear Waste Disposal Program.

Aside from setting forth concerns about the issue of transportation, which has been abley demonstrated this morning by the Senator from Wyoming, in addition to environmental safety and liability, my remarks invariably noted that the affected sites and affected States and Indian Tribes were not adequately involved in the site selection process.

It is unfortunate that my comments made in 1985, 2 years ago, about the implementation of the program hold true today, in fact, even more so.

I think that we all must agree that a general consensus is developing which believes that the program is in deep trouble. The evidence clearly suggests that the site selection process is not based on technical suitability but, rather, on political expediency.

I chaired an Appropriations Subcommittee yesterday for Senator Byrd where we outlined the wishes of the National Geologic Survey. Clearly, in the questions relating to the Nevada test site, Yucca Mountain, it is incredible that we could even consider putting a nuclear waste repository next to where atomic bombs are going off all the time. This was clearly brought out in the committee yesterday.

I think it is also important to show how desperate, for lack of a better word, the situation is. There is one bill in Congress, now floating around, that wants to give the retrievable sites $50 million a year and wants to give a State that will accept it, without any question, $100 million a year in perpetuity. However, that money is not available, of course, if the State does not agree to the nuclear waste repository.

So it is clear that the site selection process is not based on technical suitability but, rather, on political expediency.

I am also anxious to find out what the Energy and Natural Resources Committee found on their trip to Europe. Senator Hecht, who has been a proponent of a nuclear waste repository in Nevada, or at least has not objected to it, came back from that trip and said, we are approaching this in the wrong way. He has been silent until this point, and now he has come forward and said, we should not go forward with the geological siting, we should do it the way they are doing it in Europe.

I would hope, Mr. Secretary, that you would look at a different siting method. Maybe this is not right, and maybe somebody should come forward with a little courage and say that this whole process is wrong. For example, Chairman Udall suggests, quote, "The only fair thing to do might be to start over."

All Senators from States that have been selected by the Department of Energy for site characterization for a deep geologic repository have urged the Chairman of the Senate Appropriations Committee to reject the release of additional nuclear waste funds should DOE make the request.

We agree that the agency has not complied with the consultation and cooperation requirement with the affected States and tribes as set forth in the Nuclear Waste Policy Act. The Department of Energy has itself acknowledged the program's many shortcomings.

In January, the Department of Energy submitted the draft Mission Plan Amendment to Congress to delay the opening of the first repository for 5 years because the agency cannot meet the requirements of the 1982 act.

I respectfully suggest to the Senator from Virginia and to you, Mr. Secretary, that the legislation of Senator Warner's does amend the act. I do not think that you can say you are not amending it when you do amend it.

Finally, the department's budget request for the program recognizes the need to interact with Congress and resolve external issues before moving forward as planned. That is a quote. The site selection process, not only for Nevadans but for all Americans, must be as accurate as possible and it must be administered fairly, or the final site selection will not be accepted by anyone.

The program, Mr. Secretary, is fatally flawed. At this point I believe it is wise to consider imposing a moratorium on site specific activities and follow the siting process set forth in the 1982 act.

Again, Chairman Breaux, I appreciate your calling this hearing. I look forward to my opportunity to ask questions.

Senator **Breaux**. Thank you, Senator.

Senator Humphrey is not on the committee but is a guest today, in residence. I recognize Senator Symms.

Senator **Symms**. Thank you very much, Mr. Chairman.

I thought I heard Senator Reid say that Senator Hecht was a promoter of a nuclear waste repository in Nevada. I do not think that is a correct statement.

Senator **Reid**. And there is no question he was not a promoter. If I said that, I did not mean it. Senator Hecht, to this point, has been very quiet. I should have said, and what I meant to say is, he has not opposed the nuclear waste repository.

Senator **Symms**. I think on the highway bill, he told the Secretary if he could promise him it did not come to Nevada, he might reconsider his vote. So I think he feels pretty strong about it.

I want to say, Mr. Secretary, welcome to the committee. I think nuclear waste storage is one of the most frustrating things I have seen, because in my opinion, we have the technical ability to store it safely. It is all a political problem, and it truly is not a matter of technology or the ability to safely store it, from my point of view. It is a political problem. That is real, because politics is important.

My senior colleague just returned from a trip to Western Europe where he told me one of the things he saw was in Sweden where they built a $150 million intermediate waste storage repository. You drive a truck right into the thing and safely store this stuff. This is highly sensitive material that we are talking about. That cost $150 million, and he said we may end up spending as much as $1 billion just to select a site. Is that correct?

Secretary **Herrington**. We, of course, have looked at the Swedish program and the French program very carefully and have spent a lot of time on it. I think Senator Simpson also saw the Swedish program. I would like to ask Ben Rusche to comment on the Swedish program. There may be some apple-and-orange comparisons going on here that you need to know about.

Senator **Symms**. Are we going to spend $1 billion just to pick a site?

Senator **Reid**. Would the gentleman from Idaho yield just briefly?

Senator **Symms**. Yes.

Senator **Reid**. We have been told that each site could cost as much as $1 billion.

Senator **Symms**. No, $1 billion just to pick it.

Senator REID. I mean each one.

Secretary HERRINGTON. Senator Reid is right on that. It is $1 billion per site in the west for characterization.

Senator SYMMS. Just to pick the site, not to build it.

Secretary HERRINGTON. To get to the point of picking one.

Senator SYMMS. I want to get into my question. I know we are short of time. Senators Johnston and McClure introduced this legislation where they offered to pay someone. Those Senators made the statement, basically, that it was a matter of public misconception rather than a technical one and we have the ability to safely handle nuclear waste. Do you agree with that?

Secretary HERRINGTON. Yes.

Senator SYMMS. And Mr. Rusche?

Mr. RUSCHE. Yes.

Senator SYMMS. Has the Department of Energy taken a stand on the idea to try to throw out a little bait to encourage some people to become more enlightened on the subject?

Secretary HERRINGTON. We have not taken a stand on it because I think it is probably the prerogative of Congress to work on things like that. I think something like that is going to be necessary.

Senator SYMMS. In my State, for example, the INEL site is in Idaho Falls. You go downriver. Anytime there is a story in the newspaper about anything happening at INEL, I get it firsthand. I see my brother at our family farm, and he jumps all over me about it, because there is a real fear in the eyes of the public. It seems like, with as much money as we spend on the Government school system in this country, maybe we should start teaching people at the first grade level how it could be handled, and maybe in another 20 years it would not be as difficult as it is with our generation.

I want to ask another question. Has the Department of Energy received any inquiries of interest from any States or any Indian Tribes with relationship to the Johnston-McClure bill or for nuclear waste at all?

Secretary HERRINGTON. There have been some discussions but certainly not from States officially or from Indian Tribes officially. Let me check with Ben before I lock that answer in. I am being very careful in what I say.

No formal requests from a State or an Indian Tribe have been received.

Senator SYMMS. Have there been any casual requests that there might be some interest?

Secretary HERRINGTON. Lots of casual requests.

Senator SYMMS. I keep hoping that somewhere some State will jump on this.

Secretary HERRINGTON. Let me say that this has stimulated a lot of discussion in the communities from the States that have been identified and also from States that are not identified.

Senator SYMMS. Say that again?

Secretary HERRINGTON. This has stimulated a lot of discussion in the communities from States that have been identified in the first three sites but also from States that have not been identified.

Senator SYMMS. You said that you think it may be necessary to pass some legislation which would have a financial inducement to a State to stimulate the interest. Does that mean the Department endorses the Johnston-McClure bill?

Secretary **Herrington**. I think it is too soon to tell, and I think I would rather reserve judgment until we get farther down the line. Certainly something like this is potentially in the offing.

Senator **Symms**. Mr. Chairman, thank you very much.

Senator **Breaux**. Senator Humphrey, you had some questions?

Senator **Humphrey**. Yes. Mr. Chairman, may I place a statement in the record?

Senator **Breaux**. Without objection.

[Senator Humphrey's statement follows:]

OPENING STATEMENT OF HON. GORDON J. HUMPHREY, U.S. SENATOR FROM THE STATE OF NEW HAMPSHIRE

Mr. Chairman, thank you for the opportunity to participate.

I have commended the Secretary of Energy for his decision of May 28, 1986 to postpone indefinitely site-specific work on a second nuclear waste repository. I am concerned, however, with recent statements by the Secretary regarding resumption of that program later this year.

There is simply no reason to proceed with a second nuclear waste repository.

Last May, and in the draft mission plan amendment issued in January, the Department of Energy cited lower-than-anticipated waste volumes and fiscal concerns as grounds for an indefinite postponement of the search for a second repository. These conditions are valid. They remain unchanged.

Due to nuclear plant cancellations and the fact tht no new plants have been ordered since 1978, departmental projections on spent fuel volumes have decreased dramatically since enactment of the Nuclear Waste Policy Act. Over the past five years, DOE estimates regarding the inventory of spent fuel have decreased from 140,000 metric tons to as low as 79,300 metric tons. The enormous drop in projected spent fuel volumes and the uncertainty of future spent fuel discharges provide fundamental grounds for a reevaluation of the need for a second repository.

It is important to note that the 70,000 metric ton cap imposed by the Nuclear Waste Policy Act is based on neither technology nor safety. This cap is an arbitrary limit established for political purposes and based on highly inflated waste estimates. If this unnecessary cap were removed, there would be no need for a second repository.

Even assuming imposition of a 70,000 metric cap on the first repository, DOE has stated that "the Nation need not consider a second repository until the mid-1990s or much later."

Certainly safety concerns are not reflected by a decision to construct two repositories. Public and environmental risk would most likely increase through the need to transport waste to and store waste at more than one repository.

The points which I have outlined form the basis for my support of S. 621, a bill introduced by Senator Mitchell. S. 621 amends the Nuclear Waste Policy Act to lift the overall cap of 70,000 metric tons and terminate all activities relating to the Second Repository Program.

I believe that the Secretary of Energy was on the right course when he moved last May to "postpone indefinitely plans for any site-specific work related to a second repository." The draft mission plan amendment restates the department's view that "it would be prudent to postpone site-specific activities for the second repository." I urge the Secretary to maintain this policy.

As Congress further examines the Nuclear Waste Disposal Program, it is important to keep safety, technical and economic concerns firmly in mind. Current conditions are such that any action on a second repository is unnecessary and premature.

Senator **Humphrey**. Thank you, Mr. Chairman. I am not a member of the committee any longer, but I appreciate very much the opportunity to be here. I will be brief. I know the Secretary has to leave.

Mr. Secretary, in the history of the Nuclear Waste Policy Act, the capping of the first repository at 70,000 metric tons was not a technical decision. Am I correct in that?

Secretary HERRINGTON. Yes, sir.

Senator HUMPHREY. There is no technical reason to cap it at 70,000 metric tons.

Secretary HERRINGTON. Not that we know of.

Senator HUMPHREY. Therefore, the requirement for a second site, which arose out of this capping of 70,000 tons in the first site, is an artificial requirement, from a technical point of view.

Secretary HERRINGTON. That follows.

Senator HUMPHREY. If the Department of Energy is forced to renew the search for a second site, what are the costs involved?

Secretary HERRINGTON. We see an additional $60 million next year. I tried to cost it out totally, and we estimate that the pursuit at this time for the second site is in the area of $900 million.

Senator HUMPHREY. Inclusive, $900 million?

Secretary HERRINGTON. Total, in pursuing site-specific work and to be ready to meet the deadlines of the recommended sites for the eastern repository.

Senator HUMPHREY. The $900 million does not take you up to the point of actually selecting the second site, should one be selected.

Secretary HERRINGTON. No.

Senator HUMPHREY. What would the cost be?

Secretary HERRINGTON. It is real close. We would be in a position to recommend the candidates, the same way we have done in the west, for that figure.

Senator HUMPHREY. What would it cost to build such a site?

Secretary HERRINGTON. Just our characterization, as Senator Reid has pointed out, digging the two shafts, hollowing out and doing all the tests and getting ready to make the decision on the first repository is $1 billion per site. Then you pick the site sometime in 1994, or we are asking to slide that 5 years. Whoever is President in 1994 to 1999 picks the site. Then you go in additionally and build the site. I am going to say another $6 billion. I do not know if I am off-line or not. That is a reasonable figure: another $6 billion for the site itself.

Senator HUMPHREY. The total cost for searching, selecting and building a second site, were one to be built, would be how much, inclusive?

Secretary HERRINGTON. $6 billion to $7 billion.

Senator HUMPHREY. So it is $6 billion to $7 billion for a site that we do not need for any technical reason.

Secretary HERRINGTON. That is a loaded question.

Senator HUMPHREY. Did you not say a moment ago that there is no technical reason for a second site?

Secretary HERRINGTON. There is a technical reason, because the law requires us to.

Senator HUMPHREY. I do not mean that technicality. I mean some other technicality.

Secretary HERRINGTON. I do not think it is in our discretion in the Department of Energy. We carry out the law. The law says we are supposed to get a second site. That is technical enough for me.

Senator HUMPHREY. But I did hear you correctly, just a moment ago, saying that there is no technical reason for a 70,000-ton cap.

Secretary HERRINGTON. Yes, sir.

Senator HUMPHREY. Therefore, there is no technical reason for a second site, there is no technical reason for searching, selecting, and building a second site, is that correct?

Secretary HERRINGTON. On a scientific basis, yes.

Senator HUMPHREY. Therefore, there is no technical reason, using technical in the same sense, to spend $6 billion or $7 billion.

Secretary HERRINGTON. I believe that to be true. But once you dig the hole for the first and look at it, you have to decide whether that first one you pick is capable of taking more than 70,000 metric tons. To me, from a theoretical basis, that would be true. You do not know what geological restrictions there would be. So I want to be guarded a little bit in what I say on that.

Senator HUMPHREY. Thank you, Mr. Chairman.

Senator BREAUX. Let me follow up real quick. We have to make a decision from this subcommittee's standpoint on legislation. We have the draft Mission Plan before the committee.

The question is, do we need legislation? Or if Congress just appropriated $500 million, which is the President's submission, and you plan to resubmit a supplemental for an additional amount, if we just end up appropriating $500 million is that specific enough instructions to you with regard to these items? Or do we have to legislate on them?

Secretary HERRINGTON. On the figure of $725 million, we have a budget amendment that is coming. We have been very clear in our testimony that the $500 million was the original budget request, but the submission based on the Mission Plan Amendment is $725 million to carry it out.

Senator BREAUX. If you get $725 million, you can do everything in here.

Secretary HERRINGTON. We can do everything in that plan for $725 million, but we need express congressional action. If Congress is silent on the Mission Plan Amendment and just gives us $725 million, I do not feel that is legally adequate, according to the lawyers who have looked at it.

Senator BREAUX. Is that also your opinion if we just give you $500 million?

Secretary HERRINGTON. Yes.

Senator BREAUX. So you need some specific legislative instructions as to what part or if all of this is going to be carried out.

Secretary HERRINGTON. Yes, sir.

Senator BREAUX. Are there any other questions? The Senator from Maine?

Senator MITCHELL. If I could, Mr. Secretary, first I merely want to urge you to reconsider the time frame which you have stated here today. I think it is clearly, although it is hard to be objective on this issue for all of us, totally unrealistic to propose legislation of such a controversial nature and such complexity in June—even though we know we have seen the Mission Plan, we have not seen the legislation—and expect it to pass before September, when Congress will not be in session for most of that time.

Secondly, on the question of costs, if I might clarify the point raised by Senator Humphrey, I understood your's and Mr. Rusche's testimony to be that it would cost $900 million to pursue the site-specific work on the second repository location.

Secretary HERRINGTON. Yes, sir.

Senator MITCHELL. Followed by $1 billion for the cost of characterizing each of three sites.

Secretary HERRINGTON. Yes, sir. Mr. Rusche says we may not have to characterize three sites in the east, that we might be able to characterize one. That would be a decision, but it is $1 billion per site.

Senator MITCHELL. A billion per site, and you are characterizing three in the West, or propose to characterize them, and then $6 billion more to construct the facility, is that correct?

Secretary HERRINGTON. Those are rough numbers.

Senator MITCHELL. So the actual cost is about $10 billion, which includes $900 million plus three sites characterized plus construction. The characterization in the East will occur substantially later than the characterization in the West So given the history of this program, and the cost of everything else in our society, it is almost certain that eastern characterization and construction will cost more than western characterization and construction because they will occur much later in time.

Secretary HERRINGTON. It is hard to answer that. That is highly speculative. I do not know.

Senator MITCHELL. Finally, I want to get back to my very first question. I read what you said last May. You said you had the lawyers look at it very carefully and you made a decision. You obviously believed you were right and acting legally at the time. Your response was simply that you were wrong.

Secretary HERRINGTON. I was wrong in the way I phrased that. The fact is we wanted to postpone indefinitely site-specific work on the second repository. That is exactly what we did at that time, but at that point it was not obvious to me that we had to go through the Mission Plan Amendent drill that we are now going through.

Senator MITCHELL. My question is to you, what events, what persons, what reasons persuaded you between last May 28 and January of this year that you were wrong when you made that decision and that statement last May?

Secretary HERRINGTON. It was a realization on my part that we could not do this unilaterally without coming forward with an amendment to the Mission Plan and without having Congress approve that Mission Plan Amendment. The law is very clear that we have to be ready to name the site by a specific date; that is a legal requirement.

Now, I wanted to get a chance to postpone the site-specific work, and we did do that. It is obvious, however, that to comply with the Mission Plan Amendment as we are proposing now, that our amended Mission Plan has to be approved by Congress. I cannot unilaterally, as Secretary of Energy, violate the law.

Senator MITCHELL. Did you seek congressional approval of your first Mission Plan?

Secretary HERRINGTON. I did not think that was necessary. We did have it up. The decision to postpone site-specific work we did not.

Senator MITCHELL. I have one more question. If you decide to resume the site-specific work for a second location, am I correct that you will then have to seek additional funding for that purpose;

the amount which you have just described as $60 million for the first year, $900 million throughout the course of the project?

Secretary HERRINGTON. We have some, Senator, but we would have to seek more.

Senator MITCHELL. How much more would you have to seek?

Secretary HERRINGTON. About $60 million more.

Senator MITCHELL. I just want to understand clearly that if you make that decision, it will not be self-executing; you will then be required to come back to Congress for additional funds with which to implement it.

Secretary HERRINGTON. We have $25 million, I think, in there now to do that, to begin site-specific work. It would be self-executing to that extent.

Senator MITCHELL. How long would $25 million take you in point of time in the process which you now contemplate?

Secretary HERRINGTON. I have to ask Mr. Rusche to answer that question.

Mr. RUSCHE. It would take us through the year, Senator. We would just go very slowly.

Senator MITCHELL. In other words, you would not comply with the time table of the law.

Mr. RUSCHE. We would try to. We would go as fast as we could. We could spend it all in 3 months.

Senator MITCHELL. You have already made clear, in fact, in Table 6 of Secretary Herrington's written statement today that you will not comply with the timetable in the law in the second repository, even if you resume it.

Mr. RUSCHE. That is our estimate. We will do our best to meet the limitations.

Senator MITCHELL. But it is rather clear, is it not, that if you say you need $60 million more and you do not get it that you clearly are not going to be able to comply with the law?

Secretary HERRINGTON. I think that is fair.

Senator MITCHELL. Thank you very much, Mr. Chairman.

Senator BREAUX. The Senator from Wyoming has a question.

Senator SIMPSON. Thank you, Mr. Chairman.

I did return with Senator Johnston from Sweden and France. It is remarkable what they are doing. We have all the technology to do that. In 1981, when we were passing this law, they told us it would cost $100 million, and now it is going to cost $1 billion. That is beyond my comprehension. It is the same with regard to interim storage.

Senator REID. Senator Simpson, that is $3 billion.

Senator SIMPSON. I know that. I am talking about per site. I am well aware of that. I am talking about the cost going from $100 million in 1981 to $1 billion per site for characterization only. That is just punching holes. We drill 25,000-foot oil wells in the west for $7 million. That is a big-ticket item.

Secretary HERRINGTON. That is two holes.

Senator SIMPSON. Two holes, 28 holes, it does not make a bit of difference. The issue is it is a difference between $100 million and $1 billion. In Sweden, they can build an entire facility for $300 million on an MRS, and here it is going to cost $900 million. We are not talking about the size. It is the same stuff. U^{235} and UF^6 and all the rest of it is all the same all over the world: plutonium, uranium, the byproducts, cesium.

And here we are. We do not reprocess. Maybe that is something we ought to look at in the United States, to get into a policy of reprocessing and get the uranium and the plutonium off the top.

To me, John, this is like planning to build your house. The contractor, if you do not want to do it, will tell you that it is going to cost you a mint. And if you want to do it and he wants to do it, it will be just peanuts.

So it is the same here. I think there is a great deal of foot-dragging. It is not you and your administration of this Department. This Department just digs in. I do not know what is down underneath in the bureaucracy of it, but I have got a real hunch the people never liked nuclear energy in the first place and they feel it can just stall and clog and gag itself somewhere along the line. Meanwhile, we have got 43,000 fuel assemblies 12 feet long with 62 elements filled with fuel just sitting in the United States while we diddle.

Secretary HERRINGTON. You are quite right. Number 1, we desperately need a permanent waste repository. That is an absolute truth. And the other truth is, nobody wants it. And the program is staggering. It is absolutely staggering.

This is the way we have chosen to proceed: Deep geologic disposal. Mr. Rusche has a huge amount of statistics on the difference between what we are doing and what the Swedish government is doing. Some of those differences are very important.

Senator SIMPSON. Thank you.

Senator BREAUX. Are there any other questions?

Senator Reid.

Senator REID. Thank you very much, Mr. Chairman.

Following up on the line of questioning of Senator Symms and Senator Simpson, I did not go on the trip. I wish I could have gone. I, in Nevada, was asked what I thought of Senator Hecht going, and I said I wish I could have gone.

My point is we, in a couple of months last year, got 32,000 signatures in a little State like Nevada. People all over the State did not want it. It did not matter from where they came. Senator Hecht was silent through all this. He takes this trip, and he comes back saying, we are pushing this in the wrong way, we should be doing what they are doing.

Mr. Secretary, tell me what you mean when you say it is apples and oranges.

Secretary HERRINGTON. I would like Mr. Rusche to address the Swedish system versus ours, if he would.

Mr. RUSCHE. Thank you, Mr. Secretary. Senator Reid, the Swedes are conducting a program which is quite analagous to the program that we are conducting in terms of its specification. They have selected geologic disposal as the final disposal method. They have selected an interim storage method called CLAB, which is a large pool in rock which they are using for interim storage. They have an integrated system, even more integrated than ours, in which they have low- and intermediate-level facilities that are involved. Their form of government and institutional arrangements permit this to a considerably greater degree than is the case in the United States.

Now, there are a number of ways to look at these costs. Senator Simpson has alluded to some of them. I do not want to take a lot of time. But I would really appreciate an opportunity, either with you or Senator Simpson privately or the committee at some other time, but it turns out that the Swedish program has a total expected inventory of about 8,000 metric tons of fuel. We expect something over 100,000 metric tons of fuel for this program.

The Swedes have an interim facility, which some have suggested cost about $300 million, and that is the cost that has been expended for 3,000 metric tons of storage. The capacity needs to go to 8,000. When they get through, the cost of that facility, including its operation, will be about $1.32 billion.

This is the apples and oranges kind of suggestion that the Secretary was talking about.

Senator REID. Dr. Rusche, I think we do need to sit down and talk about the costs involved, because the information I have gotten and the information that Senator Simpson has expressed here this morning are quite different than that.

Mr. RUSCHE. I am reading from a cost document, the cost plans of the Swedish program. I would note, if I may, that we have the best of cooperative arrangements with our allies and, in particular, with our friends in Sweden and France and Switzerland. To get at this very subject, I have commissioned, with the collaboration of my colleagues in these countries, a cost conference which will convene on May 21 and 22, I believe, in the United States for the purpose of trying to deal with the subject.

There is no question but that the costs are lower in the Swedish program. The costs per metric ton may not be lower. In fact, our estimate is that it is not.

Senator REID. I think we would all be interested in your May meeting and the results of that, if there are findings.

I would say, however, that it appears to me—and again, this is following the line of reasoning of Senator Simpson, maybe a different conclusion—that the Department of Energy has said, we have been told that it is to be sited geologically and that is what we are going to do and we are not going to offer any opinions as to any alternatives.

My point is that if there were some alternatives suggested by the Department of Energy, you may have some takers up here who would be willing to try some other method. As an example, section 114(f) of the Nuclear Waste Policy Act requires the DOE to publish an environmental impact statement about the recommended repository site, and section 113 requires that site characterization be performed in an environmentally responsible way.

Both of these obviously require that a complete description of the current environmental conditions of the potential repository sites be determined prior to alteration of the site. The National Environmental Policy Act requires that consideration of environmental impact occur before major Federal action is taken.

The Nevada State representative asked the Department to establish an environmental baseline at Yucca Mountain. The Department has simply rejected that request on many occasions. Nevada has now requested nuclear waste funding to perform the same task.

Do you intend to fund Nevada's environmental study? That is one question. Will DOE defer on-site activities until this study is complete? As you know, we have had to go to court on a number of other things regarding DOE and how we think we have been treated in Nevada.

Mr. RUSCHE. Senator, with respect to the first question as to whether we are going to fund the request, we do have the request and have looked at it. We have had considerable discussion with your colleagues from the State. We believe that the environmental assessment provides the environmental baseline that is required and that we are in a strong position with respect to carrying out the program in accord with it.

We, nevertheless, will consider the request. I am not prepared at this point, however, to say whether it is going to be funded or not. Our present view is that it is probably not needed.

Senator REID. Mr. Chairman, I have some other questions that I will submit in writing.

Senator BREAUX. Without objection, the Senator will be able to do that.

The Secretary had indicated he wanted to leave here at 10:45. Does anybody have questions they need to ask the Secretary?

Senator SYMMS. Mr. Chairman, I just want to ask one question of Dr. Rusche.

Senator BREAUX. Mr. Secretary, you can be excused.

The executive communication on the monitored retrievable storage submission to Congress has come to this committee, so we are going to be working with you on this particular document and want some more discussion on this, because this is very, very important.

Mr. Secretary, you are excused. Thank you very much.

Secretary HERRINGTON. Thank you, Mr. Chairman. I appreciate your courtesy and that of each of you.

Senator BREAUX. The Senator from Idaho.

Senator SYMMS. Doctor, the question I want to ask is, the longer and more involved that I have been in this issue, which goes back to when I served in the House on the committee with Congressman Udall, the more I am convinced that this is an educational project, it is a PR project, it is a perception project, that the scientists and the technology and the geology can be found to safely handle nuclear waste storage.

So is there something different about the way it was handled in Sweden and France so that they do not have this public opposition to it? Or do they have opposition?

Mr. RUSCHE. First, I agree with you that there is a public perception question. There is a need for education. To that point, in a fairly limited way, where we can find reception amongst the States, we have attempted to fund such things as developing curriculum material for elementary schools.

We have to be very careful, though, as many of you know, that as soon as we start that kind of activity, which tends to have a promotional flavor to it, we find strong objection being raised by various parties. So it is not very straightforward for us to hold such activity, although it is certainly needed.

With respect to the other countries, I am in an awkward position with respect to commenting on their governmental systems. They do have a different arrangement of institutions and entities that are involved. It is certainly different in France. The French have up until now, according to my best knowledge, relatively little objection to the reactor work that has been done. But in the last 2 or 3 months, they have identified the first three sites that they are going to look at as potential candidates for a repository and have begun to receive some local opposition.

I think, though, that the root answer to your question is that we have a different kind of society in the United States than those countries. We insist on the opportunity for people to be able to be involved and to express themselves without inhibition. I think it is great that people do, and I would not want to trade it. But the other systems do afford opportunities for progress that we may not have in this particular circumstance.

Senator Symms. I am not criticizing our system, either, but we have got ourselves in a situation where we are beholden to the Middle East, to the Persian Gulf, for oil supplies. We have restricted the use and the development of many of our other alternate energy sources with very restrictive laws on what you can and cannot do to mine and transport coal and so forth.

Without a nuclear waste storage site, our nuclear industry basically is going to be paralyzed. I find it very frustrating. We try very hard in Idaho, in a bipartisan sense, to not use this issue as a political thing. It concerns me when we constantly hear people saying well, this Senator said this or this Senator said that, to try to politicize the issue which sheds absolutely no enlightenment on the subject.

I find it very difficult, because I think we have the greatest system and country on earth, but yet this is an issue we have not been able to cope with. If we cannot get a site selected, at least for one site, and get on with it, we virtually are going to paralyze the future development of the nuclear alternative to being beholden to the sheiks of Saudi Arabia and the Persian Gulf. It is just that simple.

I think there is an issue here that is being missed by many of us politically, that this is a place where I would appeal to my colleagues on this committee and the newspeople that are involved in getting this story out, to people in the Administration whether it is a Republican or Democratic Administration, that what we need is enlightenment and no emotional breast-beating on the subject, if you will, if we expect to ever solve this problem.

Otherwise, we are going to deny the United States of America and our citizens an opportunity to use a technology that we basically developed at the outset, that the rest of the world can use it and we will be denied that opportunity.

Thank you very much, Mr. Chairman.

Senator Reid. We would become less emotional if Idaho would take it.

Senator Symms. I think we might do better, Senator, if you would not try to put words in the mouth of your colleague. I would just say that. I think it does not add any enlightenment to the thing to have Senators come in and start trying to use it as a political issue at home.

Senator REID. I would still rather have Idaho take it.

Senator BREAUX. Regarding the Draft Mission Plan Amendment, the Secretary's statement said we would get the final version sometime during the summer. The problem we have is that we are going to have to legislate and then Congress is going to have to appropriate under Gramm-Rudman-Hollings by what, June 15 or so.

Mr. RUSCHE. Yes, sir.

Senator BREAUX. We are not going to have the final plan before we have to make the decisions on it. Do you see what the problem is?

Mr. RUSCHE. Indeed I do.

Senator BREAUX. We are not going to have the information in front of us in the time that we have to get the appropriation bill out of the Congress.

Mr. RUSCHE. Mr. Chairman, we of course were constrained by the realities of events, and we did get the plan as quickly as we could. One of the purposes, of course, for issuing it in draft form, recognizing that it is subject to some change as a result of the comments, was to make all parties, including the Congress, aware of our expected direction.

I do not know much better what we can do, other than ignore the comments, which I believe is not good public policy.

We need to take those into account. We have received about 270 comments from approximately 65 commentors. I think we need to accommodate those where we can, or at least answer them in every case. That means that we will just not be able to forward our final amendment to the mission plan earlier than June.

Hopefully, some of you who have already recognized this fact, if in your judgment, as the Secretary indicated, thought that what we had in the plan on your judgment you were prepared to move, I will promise you we will get the final version before you as fast as we can.

Senator BREAUX. Senator Simpson.

Senator SIMPSON. Dr. Rusche, let me just ask a question. I fully realize the perils of talking about granite States. But nevertheless, in Sweden and France, granite is the accepted repository. Another irony in Sweden is that they, by referendum, have agreed to phase out nuclear energy by the year 2010. So that is a little different attitude than we have here.

Yet they have no alternative, and now they are all rethinking it. As one bright man said, well, there will be three prime ministers that will go through the grinder before that, and we will get it all back. There is no option left for them without fuel, and the Chernobyl disaster, of course, was very frightening to them.

But granite appears to have a number of desirable characteristics; at least the Swedish and the French think it does. Why would it not make some kind of sense to consolidate the two repository programs into a search for a single repository, to further work on the western sites—I ask this as a question—while we examine granite in a more detailed manner, not just eastern granite but granite anywhere, and then pick the most single well-qualified medium for construction of a single repository?

In the meantime we could build an MRS for the storage of spent fuel, much like the Swedes have done, to allow it to cool for 30 to 40 years prior to emplacement in a repository.

Would that approach more equitably spread the geographic burden while ensuring that we have picked the most-qualified medium available and respond to the questions that some of us have about the need for a second repository?

Mr. RUSCHE. Senator Simpson, your information about France is different from mine in that I understand France is looking at media other than crystalline and they have not selected crystalline.

Senator SIMPSON. I am saying that they have not ruled granite out. They have got four sites selected, and granite is in there.

Mr. RUSCHE. And we have not ruled it out, either.

Senator SIMPSON. Yes, that is a nice thought, but I do not quite believe it. You sure did. You are not through yet, but that is what it came to, in essence.

Mr. RUSCHE. On the contrary, Senator, we are spending about $20 million a year working with the Swedes, with the Canadians, with the Swiss, in their crystalline rock effort. We have an excellent program in crystalline rock.

Senator SIMPSON. If you would respond to the question, that would be better yet.

Mr. RUSCHE. The Department was charged with carrying out the Act to the best of its ability. The Act specifies the course that we are to take, as best as we can interpret it. If it were the direction of Congress to follow the course you suggested, we would certainly attempt to do that.

If you ask my professional opinion as to whether that would produce a net increment in the program from a technical standpoint, my answer would be: I do not think so.

Now from a political standpoint, which I am not very qualified to deal with, it may have many of the values that you have suggested.

I think the principal effect it would produce is that it would delay by 10 to 20 years the operation of the first repository in the United States. If that again is the will of Congress, that would be an acceptable course to follow.

Senator SIMPSON. I do come on to you, and I do not want to be hard. But you are key; you are a very important key in all this. You have an institutional knowledge and memory of this. I know that from my days as Chairman. When we speak of what did occur in the face of what we had on the books as a law, carefully crafted, and then the activity in May with regard to that issue was very disappointing. You know that, and you know how I feel, and I feel strongly about that.

I feel that definitely granite States were very much a part of the political consideration in that. And that is why I am saying it, and I will hang with that.

Senator MITCHELL. Mr. Chairman, may I ask a question following on the questions of Senator Simpson?

Senator BREAUX. Yes, you may.

Senator MITCHELL. Senator Simpson has pointed out that the United States has four different types of geology which we are examining: basalt, salt, tuff, and crystalline rock. He has suggested to you that because the Swedes have selected granite, that we should thereby consolidate our program in granite on the basis of, at least in part, their experience.

My question to you is, Does the geology of Sweden have the diversity of the United States? That is, are there basalt, salt and tuff areas in Sweden which are of sufficient quantity to make possible the location of a repository in those types of geology?

Mr. RUSCHE. Senator Mitchell, to the best of my knowledge, the selection options are considerably more restricted in Sweden. In France, they are somewhat broader, and diverse media are being considered.

Senator MITCHELL. My understanding is that there are no such areas in Sweden, and therefore the decision by the Swedes to proceed in granite is dictated by the geologic necessity, that that is the only alternative practically available to them. So the suggestion that that should be used as the basis for a decision in this country, where we have a much wider range, it seems to me, is wholly unfounded.

Indeed, we ought to avail ourselves of the opportunity to take advantage of the broader diversity that we have and not make a decision based on another experience which is in wholly different circumstances and which is dictated by a necessity which does not exist in this country.

Mr. RUSCHE. Mr. Chairman, may I offer one more comment?

Senator BREAUX. Yes.

Mr. RUSCHE. I think, notwithstanding the fact that the options are more limited in Sweden, crystalline rock appears to be a rock body, or a geologic formation, that would have considerable promise. Hence, we thought we should look at it. You thought we should look at it, or the Act directed us to look at other media.

On the other hand, I would not want to give the impression that the other media are deficient and that everything we know tells us that the other three media would be found fully acceptable. The primary difference will be the cost, and in the end we will make a choice between three acceptable sites, if we proceed on the course that we are on, and we will choose it on the basis of cost.

I think from the standpoint of protecting the public health and safety, the course that we are on has the best potential for producing the result that I think the Congress said it wanted produced by the NWPA. That is not speaking in terms of the other factors that you are much better equipped than I to deal with. I am talking about the ability to protect the public health and safety in a sound, responsible, business-like way.

Senator SIMPSON. Mr. Chairman, I would just say to Senator Mitchell that it is true, there is certainly limited media selection there. One of the interesting ironies is that there is so much granite and their conservation is in high tilt now because they are phasing out the industry because radon is filling their homes. They have got to go to various exchanges of air and a mandatory requirement of radon reduction.

Wait until we get into that one in the United States on the issue of radon, sitting on areas that have nothing to do with radioactivity ordinarily, background radiation, and that is the irony of

Sweden. They have more radon in their homes than any other nation in the world, and they want to phase out nuclear energy in 2010.

Senator MITCHELL. I agree that radon is a serious problem. I have got a bill in on that, which you ought to take a look at.

Senator SIMPSON. I will, George.

Senator MITCHELL. I would also want to point out that the U.S. waste isolation pilot project, the so-called WIPP, is located in a salt formation, is it not?

Mr. RUSCHE. It is indeed, and salt is one of the three formations that we are looking at.

Senator MITCHELL. Right. And that was a deliberate decision to select that as the appropriate media for this type of facility.

Mr. RUSCHE. As an acceptable media.

Senator MITCHELL. Yes, an acceptable media for this type of facility.

Senator REID. Mr. Chairman.

Senator BREAUX. The Senator from Nevada.

Senator REID. I have just one other question that I would like to ask Dr. Rusche. The Department of Energy did not deny Nevada funding for technical studies at Yucca Mountain in 1984. The Ninth Circuit Court of Appeals affirmed the State's right to do such studies in December of 1985. DOE still has not funded these studies. Most recently, the Department has taken the position that they are not scientifically justifiable.

I detect that DOE is stalling the State in fear that general investigative inquiry proposed by Nevada may disprove DOE's optimistic hypothesis about Yucca Mountain. This is particularly disturbing, when some of this inquiry is proposed in the very areas where the NRC staff says much information will be required to satisfy NRC licensing concerns.

Dr. Rusche, can you give me any assurance at this time that DOE is going to follow the recommendation of the State in, I believe, the Ninth Circuit Court of Appeals that we will have money to go ahead with these technical studies?

Mr. RUSCHE. Senator, I am not sure, with such a broad statement, that I can answer yes. I do know of discussions that we still have underway. We are obligated to follow the guidelines that the Ninth Circuit laid down for us as a result of the litigation brought by your State. We believe we have been faithfully doing that, and we will continue to try.

We do understand our obligation to provide funding for the state to carry out appropriate studies, consistent with the guidelines that the court laid down for us. If they meet that test, we will fund it.

Senator REID. Thank you, Mr. Chairman, for your patience. As I indicated before, I have some other questions I would like to submit for the record.

Senator BREAUX. We will submit those questions to the Department.

Senator SIMPSON. Mr. Chairman, I have some questions, too, that I would like to insert in the record.

Senator BREAUX. Without objection, all members of the committee that have questions will be allowed to submit them to the Department.

Dr. Rusche, we thank you.

The subcommittee will be in recess until further call of the Chair.

[Whereupon, at 11:25 a.m., the subcommittee adjourned until further call of the Chair.]

[Statements and other material supplied for the record follow:]

STATEMENT OF

JOHN S. HERRINGTON
SECRETARY OF ENERGY

BEFORE THE

SUBCOMMITTEE ON NUCLEAR REGULATION
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

APRIL 23, 1987

Mr. Chairman and Members of the Subcommittee:

I appreciate the opportunity to appear before you today to review policy issues of interest to the Subcommittee regarding the program being carried out under the Nuclear Waste Policy Act of 1982 (the NWPA). With me is Ben C. Rusche, my Director of the Office of Civilian Radioactive Waste Management (OCRWM).

We have prepared a Draft Amendment to the Mission Plan for the Civilian Radioactive Waste Management Program. In that document, which we sent to the States, affected Indian Tribes, the Nuclear Regulatory Commission (NRC) and other Federal agencies for comment -- and made available for public inspection -- we discuss significant developments and new information in the waste program.

The Mission Plan is intended to keep Congress fully informed of progress in the program and the amendment will ensure that the Plan reflects current program status and our assessment of needed alterations. After review of the comments received on the draft, DOE will revise the amendment in response to the comments as appropriate and will submit it formally to Congress for information and direction. We would expect this to occur early this summer, and earnestly seek Congressional action on the proposed program revisions. If no action is taken by the Congress, we will continue with the first repository program and return to the search for specific sites for a second repository.

As you requested in your letter of invitation, I would like to give a brief status of the waste program and address the specific points of interest to the Subcommittee. For clarity I have attached several tables and charts to my statement. For frame of reference, Table 1 contains the FY 1987 major funding levels and the FY 1988 Budget Request.

FY 1987 FUNDING

The funding level provided by Congress for FY 1987 is $499 million, of which $420 million has been made available and $79 million will be made available only by approval of the House and Senate Appropriation Subcommittees on Energy and Water Development, and certification by me that a good faith effort has been made to comply with the requirements of the NWPA relative to consultation and cooperation with States and Indian Tribes.

To this end, we have initiated expanded consultation activities and have under preparation a report which, when completed, I will submit to Congress, requesting the remaining $79 million.

Since enactment of the Continuing Resolution and the provisions regarding the limitations on accessibility of the $79 million, we have increased our efforts to negotiate consultation and cooperation (C&C) agreements. In this regard, we are considering a number of new initiatives to encourage these negotiations. For example, DOE is willing to consider the adoption and implementation of de facto agreements or memoranda of understanding that would be of a smaller scope than a full C&C agreement, should the State or affected Indian Tribe find this advantageous. This would permit the adoption of procedures agreed upon by the parties immediately, even before the C&C agreement is fully developed. Such an approach is attractive because it recognizes the importance and the achievements of the negotiation process that has been underway since the NWPA was signed into law.

But C&C negotiations and agreements are but one part of the process of working with affected parties. Interactions with affected and interested parties occur every day.

In addition, a number of actions outside formal C&C negotiations have been taken recently as a result of recommendations. For example, as States and Indian Tribes requested:

- o States and affected Indian Tribes are now invited to attend all OCRWM coordinating group meetings; and
- o Quarterly Meetings with States and affected Indian Tribes have been opened for the public to attend.

There are currently twelve Coordinating Groups and they are listed in Table 2. The Coordinating Groups meet two-to-four times per year and provide a forum for the discussion of common problems and their resolution. It is expected that additional coordinating groups will be established and existing ones abolished as requirements and priorities change.

Since the summer of 1984, Quarterly Meetings have been held with States and affected Indian Tribes to discuss topics mutually agreed upon for the agenda. As a result of recommendations by the States and Indian Tribes, these meetings will now be open to the public. The first meeting open to the public was held on February 12, 1987 in Spokane, Washington. The agenda was coordinated among the States, the Indian Tribes and DOE and a public announcement was made by the DOE Operations Office in Richland, Washington. The Draft Mission Plan amendment was a major topic of discussion at the meeting. The next one of these meetings is scheduled for May 28 in Las Vegas, Nevada.

I mention these activities because I believe it is important to point out that, while formal consultation and cooperation negotiations are only required to begin after a candidate repository site is approved for site characterization, consultation and cooperation are everyday activities and are the responsibility -- DOE's responsibility, the States' and Indian Tribes' responsibility -- of all the affected parties.

FY 1988 BUDGET REQUEST

The FY 1988 funding level required to carry out the program as described in the draft Mission Plan amendment is estimated to be $725 million. However, the actual funding level requested in DOE's FY 1988 budget was $500 million. This level is based upon the recognition that Congressional direction provided in the FY 1987 Continuing Resolution indicated the need to interact with Congress and to address external issues before moving at the pace we believe is necessary.

Authorization for the higher funding level ($725 million) is appropriate and consistent with the program presented in the draft Mission Plan Amendment and outlined in the FY 1988 funding estimate. Therefore, an amendment to the FY 1988 budget request is planned to be submitted to provide the required funding to carry out the program as described in the funding estimate. We seek your approval of the revised Mission Plan to provide direction concerning submissions of the FY 1988 budget amendment.

The FY 1988 budget request will provide for extensive site characterization activities, including the start of exploratory shaft construction, and intensive engineering tests and analyses to support the waste package and repository designs for the first repository. Actual exploratory shaft construction is planned to commence in FY 1988 at two of the three candidate repository sites approved by the President on May 28, 1986, for site characterization.

Table 3 reflects a possible FY 1988 allocation of $500 million by task, within the Nuclear Waste Fund program. This allocation is currently under review to identify adverse impacts, which would result from a $500 million FY 1988 funding level. Efforts to minimize these impacts could result in a change to this preliminary allocation.

If only $500 million were appropriated in FY 1988, the revised program schedule, and planned accomplishments developed in support of the Draft Mission Plan Amendment would not be achieved. Listed below, by program, are the specific accomplishments which would be delayed.

First Repository

The exploratory shaft construction at the tuff and basalt sites would be delayed; final design of the exploratory shaft at the salt site would be delayed; the intensive surface-based site characterization activities would be reduced by 50 percent at all three sites; and the waste package and repository advanced conceptual design would be delayed. These delays would result in a slip in the schedule contained in the draft Mission Plan

Amendment of a minimum of 6 months. Additionally, financial assistance to affected States and Indian Tribes may be impacted.

Second Repository

The cooperative international activities in support of the second repository program would be slowed.

Monitored Retrievable Storage (MRS)

The operation of the MRS, if authorized as proposed, is linked to the construction authorization for the first repository which would be further delayed by a funding reduction to the $500 million level. The MRS schedule would, therefore, slip past the first quarter of the 1998 deadline to begin acceptance of spent fuel and high-level waste.

Transportation and Systems Integration

Transportation activities and cask procurement would be delayed approximately one year.

FIRST REPOSITORY

Last May, I nominated five sites in Mississippi, Nevada, Texas, Utah and Washington as suitable for characterization and recommended to the President three of those sites for characterization as candidates for the first repository. The three sites are: the Yucca Mountain site in Nevada, the Deaf Smith County site in Texas and the Hanford site in Washington. The President approved my recommendation.

With the President's approval of the three sites to characterize, we have finally passed beyond the crucial decision of where to focus our repository siting efforts. That action formally marked the beginning of site characterization and represented a major milestone in development of the Nation's nuclear waste disposal system.

Site characterization will take approximately six or seven years, depending on the site.

The experience gained in achieving the important milestone of approval of sites for characterization, and advances in the technical planning of the program, have led us to reassess the program and schedule for the first repository. The new schedule -- as presented in the draft Mission Plan Amendment -- shows a 5-year extension of the date for the acceptance of waste at the first repository, from 1998 to 2003. Table 4 attached to my statement shows the current schedule for the first repository as compared to the schedule contained in the 1985 Mission Plan.

There are several reasons for the near-term extension. Among them are:

- o The additional time it took to meet the initial milestones in the NWPA, including optional steps taken to enhance State and Indian Tribe involvement;
- o The recognition that more time should be provided in the future for consultation and interaction with the States, affected Indian Tribes, and other parties; and
- o The recognition that more technical information is needed than was previously anticipated.

Since the NWPA was passed, and given the controversial nature of the program, many parties have insisted that the schedule specified in the Act was not realistic and not achievable. It has been pointed out on many occasions that the schedule and the siting process are not reconcilable -- that to achieve one, it would be necessary to sacrifice the other.

DOE has attempted to meet both objectives and has developed an aggressive schedule that would have permitted the first repository to begin accepting waste in January 1998. However, at the same time, Mr. Rusche and I have insisted that the schedule not be allowed to prevail at the expense of technical excellence and public participation.

We now recognize that more information, more consultation and more time are required in the near-term to ensure public confidence in and development of the first repository for long-term (permanent) disposal. We remain optimistic in our planning but realize that, for many early actions, we underestimated the time required. Furthermore, the revised schedule recognizes the potential for contingencies that are yet to appear.

The 5-year extension for startup operations at the first repository, therefore, requires a reevaluation of the waste acceptance strategy. Based on our reevaluation, we believe that the most advantageous course includes the development of a Monitored Retrievable Storage (MRS) facility. And, as presented in the draft amendment, DOE believes it can start accepting waste for disposal in 1998 through the development of an MRS facility, which I will discuss in a moment.

Although we had planned to begin exploratory shaft construction at one or two of the sites this fiscal year, Congress, in the appropriation for the waste program for Fiscal Year 1987, specified that no funds are to be used for drilling any exploratory shaft at any site in FY 1987. However, Congress did allow for other site-specific work to be conducted at reduced funding levels, and we are proceeding with these allowable characterization activities during this year.

The current activities at or related specifically to each of the candidate sites include the following:

- At the Nevada site, land access is being pursued with other Federal agencies.
- At the Washington site, site plans are proceeding for hydrology tests that will precede exploratory shaft drilling.
- At the site in Texas, DOE is proceeding with its plans for obtaining access to the land. In late February, we met with property owners and held public meetings in Texas near the Deaf Smith County candidate site to describe project activities, studies and land access plans for the site and to answer questions. In addition, about 10 people from the DOE Salt Repository Project offices and the support contractor have moved from offices in Columbus, Ohio, to temporary office trailers placed on land leased by DOE near Vega, Texas. Since March 2, they have been available on a daily basis to respond to questions about job and contracting opportunities for local people and to assist in locating permanent office facilities for the project. Texas, unlike the Nevada and Washington candidate sites, has had no DOE office for this program located near the site or in the State.

Table 5 contains a breakdown of the FY 1987 budget request and appropriations (P.L. 99-591). The chart shows the amounts specifically requested and how they were allocated for each of the three candidate sites for the first repository.

Of the $725 million estimated to be necessary to carry out the program in FY 1988 as described in the draft Mission Plan Amendment, $525 million is estimated for first repository activities as shown previously in Table 1.

SECOND REPOSITORY

On May 28, 1986, following the announcement of the President's approval of three sites for characterization as candidates for the first repository and based on a number of factors, I announced that site-specific work for identifying new candidates for a second repository was postponed indefinitely. The basis for this decision, which is discussed in the draft Mission Plan Amendment, includes declining projections of the rates at which spent fuel will be discharged from commercial nuclear power plants, progress in siting the first repository and confidence in finding suitable sites among the three sites approved by the President for characterization. It also reflects the advantages to be gained from the experience of the first repository, the expectation of Congressional approval for the MRS facility, and responsible fiscal management.

Since that decision and with circulation of the Draft Mission Plan Amendment, many issues have been raised and much discussion, comment and thirteen legislative proposals have resulted.

I want to clarify, with regard to our decision, the following points: I have stated that "indefinite postponement" does not mean "cancellation." DOE has not abandoned a second repository.

When making the announcement I thought, based on the factors I mentioned earlier, that it was appropriate to leave the specific timeline for site-specific work open-ended. It has now become clear to me that leaving it open-ended has in itself led to confusion regarding our intent.

To clarify our intent and for planning purposes, my statement includes a revised timeline for milestones related to siting a second repository. I believe it is important to point out that the schedule has changed many times since passage of the NWPA; and, as we progress through the development of the first repository, I would suspect that additional adjustments may have to be made from time to time. However, through the many opportunities for dialogue -- formal and informal -- with Members of Congress and others, as we progress through the program and as conditions change (such as spent fuel projections), there will continue to be opportunities for Congressional direction and oversight.

Table 6 of my statement provides a schedule for second repository activites based on requirements of the NWPA, 1985 Mission Plan, schedules in the FY 1986 and FY 1987 budget requests, and estimated schedules based on considerations of the Draft Mission Plan Amendment.

DOE remains fully committed to a two repository system and to carrying out the intent of Congress. The specific requirement related to the second repository is stated in the NWPA in terms of the maximum amount of spent fuel that the Nuclear Regulatory Commission can allow to be emplaced in the first repository until a second repository is in operation. The NWPA sets this figure at 70,000 metric tons.

Under the revised schedule for the first repository, this limit would be reached sometime after the year 2025 if the annual rate of waste emplacement is 3,000 metric tons. The experience of siting the first repository suggests that site-specific screening leading to the identification of potentially acceptable sites should start about 25 years before the start of waste acceptance for disposal at the second repository. Therefore, to have the second repository available by about 2025, site-specific studies need not start until the mid- to late 1990s, as presented in the schedule in Table 6.

For second repository activity, the FY 1987 funding level of $19.8 million and the FY 1988 request for $24 million (Table 1) provide for non-site-specific technical studies in alternative geologic media to determine their suitability for hosting a second geologic repository. This represents essentially level funding between FY 1987 and FY 1988 since postponement of site-specific activities resulted in a FY 1986 savings of $3.2 million which was carried forward into FY 1987.

A significant portion of these studies is expected to involve cooperative efforts with other countries.

Should Congress not approve this fiscal year the program laid out in the draft Mission Plan Amendment for second repository activities, DOE would go back and review the more than 60,000 comments received on the Draft Area Recommendation Report issued in January 1986 and issue a final Area Recommendation Report which would formally identify 12 sites for field work leading to consideration as candidates for a second repository. An additional $60 million would be required in FY 1988 for this work.

MONITORED RETRIEVABLE STORAGE

The NWPA (Section 141) directs DOE to complete a study of the need for and feasibility of a Monitored Retrievable Storage (MRS) facility, and to submit to Congress a proposal for the construction of one or more MRS facilities. After being enjoined from submitting the MRS proposal to Congress for more than a year, a Supreme Court ruling allowed us to submit it on March 31, 1987. Our proposal, as required by the NWPA, includes a program for siting, development, construction and operation of an MRS facility, should Congress approve its construction; a plan for funding the construction and operation of such a facility; and a plan for integrating such a facility into the overall Federal waste management system.

We continue to believe that an MRS facility should be an integral part of the waste management system. As described in our proposal, it would substantially enhance the waste management program and capabilities at an incremental cost of less than five percent of the total program costs and would provide greater assurance that we could begin receiving waste in 1998.

We believe that an MRS, centrally located to the majority of the spent fuel generated, would enhance the disposal system by receiving and consolidating the spent fuel prior to shipping to the repository.

The proposal submitted to Congress is accompanied by Nuclear Regulatory Commission and Environmental Protection Agency comments, as well as the State and local community group comments.

In our proposal, we recommend that Congress:

- Approve the construction of an MRS facility at Clinch River near Oak Ridge, Tennessee;
- Limit the storage capacity at the MRS facility to 15,000 metric tons of spent fuel;
- Preclude waste acceptance by the MRS facility until a construction authorization for the first repository is received from the NRC;
- Direct DOE to implement measures responsive to the concerns and recommendations of the State and local governments; and
- Direct DOE to implement the program plan accompanying the proposal.

The expenditures for the MRS program from the time of Congressional approval until the facility becomes operational are estimated at approximately $907 million, of which approximately $710 million would be used for construction. The annual operating costs for the facility, which would employ about

600 workers, would be approximately $73 million, not including financial assistance and tax-equivalence payments. The estimates are higher for the initial years of operation, when up to 1600 sealed storage casks must be fabricated, and lower in the later years, when the MRS facility stops receiving spent fuel and is only shipping spent fuel in cannisters to the repository. Decommissioning would cost approximately $83 million. These add up to a total construction, operation, and decommissioning cost of about $3 billion.

The net cost to the total system is about $1.5 billion because of savings at the repository and in the transportation system. The costs borne by the utility rate payers would be offset by savings in at-reactor storage costs; these costs would be avoided because an MRS facility would allow DOE to accept spent fuel at an earlier time and, under certain scenarios, it is possible that the addition of an MRS facility would result in net cost savings to the overall system. For example, it has been estimated that the deployment of an MRS facility consistent with the Draft Mission Plan Amendment would preclude the need for additional storage capability at more than 15 reactor sites and could offset more than 10,000 MTU of at-reactor storage. This incremental at-reactor storage is estimated to cost $100,000 per metric ton, which would result in a savings of at least $1 billion at the reactor sites. The financial costs of adding an MRS facility are considered small in comparison with the benefits.

From the time of Congressional approval to completion of construction of the MRS, it is estimated that 10 years are required. Table 7 provides a timeline of the major milestones and program elements involved in the MRS deployment schedule.

Should Congress approve proceeding with an MRS facility, we are committed to seeking immediately to enter into a formal Consultation and Cooperation Agreement with the host State.

The FY 1987 allocation of $20 million had assumed Congressional authorization to proceed; however, only $352,000 has been expended through the first half of FY 1987.

The FY 1988 funding estimate of $58 million for the MRS program assumes Congressional approval to proceed with activities that are critical to the deployment of an MRS facility.

PROPOSED LEGISLATION

As you requested in your letter of invitation, the following is a brief statement of our initial position on Senate Bills S.621, S.642, S.833, and S.839.

With respect to both S.621 and S.642, which would essentially amend the NWPA by removing the requirement to site, construct and operate a second repository, the Department does not at this time either support or oppose the Bills. We are in the process of reviewing the potential implications of them on the waste program.

S.833, regarding the prohibition of transporting waste through urbanized areas, the Department opposes, since the transportation safety record developed over the past years has demonstrated conclusively that spent fuel and high-level waste can be shipped safely even through ultra-urban areas.

Regarding S.839, which essentially provides financial incentives, the Department believes that its approach may have merit, since it appears to have well thought out funding advantages and addresses some valid issues in implementing the NWPA. However, because it is currently under policy review within the Department, we do not yet have a formal position.

NUCLEAR WASTE FUND

In April 1983, DOE adopted a fee of one mill (one-tenth of a cent) per kilowatt hour charged to utilities for all nuclear-generated electricity beginning April 7, 1983, as specified in the NWPA. This fee is referred to as an "on-going fee." In addition, spent fuel or high-level waste generated prior to that date is subject to a fee equivalent to an average charge of one mill per kilowatt hour. This fee is referred to as a "one-time fee." For the "one-time fee," utilities had until June 1985 to decide on one of three payment options. Those who chose to pay in one lump sum by June 1985, to save interest charges, made payments totalling more than $1.4 billion. This represents more than half of the one-time fee liability of approximately $2.3 billion for civilian nuclear waste in existence prior to April 7, 1983. Additionally, quarterly one-time fee receipts have totalled approximately $9 million between July 1985 and March 1987.

The status of the revenues, including interest earned on investments and expenditures to date, is shown in Table 8.

With regard to the status of the defense waste fee, on April 30, 1985, the President determined that there was no basis for the establishment of a separate repository for disposal of defense high-level waste and that the Secretary should proceed promptly with arrangements for the use of one or more of the repositories to be developed under the Act.

On December 2, 1986, DOE published a Notice of Inquiry (NOI) in the Federal Register that described the proposed method for calculating the fee for defense high-level waste. Following the 60-day comment period, comments were received from 26 sources. The comments are now being evaluated by DOE's Offices of Civilian Radioactive Waste Management (OCRWM) and Defense Programs, and a final Federal Register Notice is planned for early this summer.

The primary concerns expressed by the commentors were:

(1) that full cost would be recovered for the disposal of defense high-level waste considering the time value of money;

(2) a concern that a rulemaking procedure should be used for determination of fee calculation methodology and payment schedule;

(3) the lack of a payment schedule in the NOI;

(4) the equitability of the relative quantities of civilian and defense waste; and,

(5) the method proposed for sharing common fixed costs, such as development and engineering.

All comments are being carefully considered. After the fee calculation methodology has been finalized, OCRWM and Defense Programs will develop a Memorandum of Understanding that will include plans for requesting the appropriation of funds to pay the cost of disposal of defense high-level waste.

CONCLUSION

Mr. Chairman, this concludes my remarks. I would be happy to respond to any questions you may have and, with your permission, I may call on Mr. Rusche for more details.

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TABLE 1

FY 1988 CONGRESSIONAL BUDGET
NUCLEAR WASTE FUND
($in Thousands)

	FY 1987 Approp.	FY 1988 Request
NUCLEAR WASTE FUND		
Repository Development		
o First Repository	$307,446	$525,044
o Second Repository	19,800	24,000
Monitored Retrievable Storage	20,000	58,000
Transportation and Systems Integration	26,000	63,043
Program Management and Technical Support	46,754	54,913
	79,000 a/	
TOTAL	$499,000	$725,000
Less		225,000 b/
FY 1988 CONGRESSIONAL BUDGET REQUEST		$500,000

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a/ Not currently available. Availability is subject to satisfactory completion of the terms contained in the Continuing Resolution, P.L. 99-500 and P.L. 99-591.

b/ The funding level required to carry out the program as described in the Department of Energy's budget and in this statement and shown in the draft amendment to the Mission Plan is estimated to be $725 million. The President's request is based upon the recognition that Congressional direction provided in the FY 1987 Continuing Resolution indicated the need to interact with Congress and to resolve external issues before moving forward as planned. A request for a higher funding level would be appropriate presuming satisfactory resolution of these issues. Therefore, upon satisfactory resolution, an amendment to the FY 1988 budget will be submitted to provide the required funding to carry out the program described herein.

TABLE 2

U.S. DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
EXISTING COORDINATING GROUPS

The following coordinating groups are currently in existence and supported by their own charters:

- Site Characterization Plan Coordinating Committee
- Geoscience Coordinating Group
- Repository Coordinating Group
- Waste Package Coordinating Group
- Performance Assessment Coordinating Group
- Licensing Coordinating Group
- Quality Assurance Coordinating Group
- Transportation Coordinating Group
- Institutional Affairs Coordinating Group
- Project Management Coordinating Group
- OCRWM Information Resources Management Coordinating Group
- Environmental Coordinating Group

TABLE 3

NUCLEAR WASTE FUND
FY 1988 ALLOCATION BASED ON $500 MILLION
($ in Millions)

First Repository	$357.09
Second Repository	16.55
Monitored Retrievable Storage	39.50
Transportation and Systems Integration	42.95
Program Management and Technical Support	43.91
TOTAL	$500.00

TABLE 4

NUCLEAR WASTE POLICY ACT MILESTONES

COMPARISONS WITH NWPA, JUNE 1985 MISSION PLAN, AND DRAFT AMENDMENT TO THE MISSION PLAN

ACTIVITY	NWPA REQUIREMENT	1985 MISSION PLAN	1987 DRAFT AMENDMENT
1. Identify States w/ potentially acceptable sites	4/7/83	--	--
2. State/Tribal notification as to being potentially acceptable sites	7/7/83	--	--
3. Issue Siting Guidelines	7/7/83	12/84	--
4. Issue Mission Plan	5/84	--	--
5. Issue Environmental Assessments	--	11/85	--
6. 1st Repository Nomination/Recommendation of sites suitable for characterization	1/1/85	11/85	--
7. Presidential Approval of sites	--	1/86	--
8. Seek to enter into C&C agreements	7/86	--	--
9. Issue SCP's	--	3/86 tuff 3/86 basalt 10/86 salt	mid-87 tuff mid-87 basalt 1st Qt.88 salt
10. Initiate Construction of Exploratory Shafts	--	3rd Qt. 86 tuff 3rd Qt. 86 basalt 3rd Qt. 87 salt	2nd Qt. 88 tuff 3rd Qt. 88 basal 4th Qt. 89 salt

* Informal C&C negotiations were initiated with the State of Washington and Umatilla Indian Tribes in mid 1983

(TABLE 4, cont'd)

ACTIVITY	NWPA REQUIREMENT	1985 MISSION PLAN	1987 DRAFT AMENDMENT
11. Testing to support DEIS complete	--	12/89	1st Qt. 92 tuff 1st Qt. 93 basalt 1st Qt. 93 salt
12. Issue FEIS	--	12/90	4th Qt. 1994
13. President recommends site to Congress	3/31/87	3/91	4th Qt. 1994
14. Site designation effective	5/91	5/91	1st Qt. 1995
15. Submit License Application to NRC	--	5/91	1st Qt. 1995
16. NRC issues Construction Authorization	--	8/93	1st Qt. 1998
17. Initiate Repository Construction	--	8/93	1st Qt. 1998
18. NRC issues License for Phase 1 Operations	--	12/97	1st Qt. 2003
19. Phase 1 Repository Operations begins	--	1/98	1st Qt. 2003
20. Phase 2 Repository Operations begins	--	2/01	2nd Qt. 2006

TABLE 5

FY 1987 BUDGET
NUCLEAR WASTE FUND
($ in Millions)

	FY 1987 Congressional Request	FY 1987 Appropriation	Percent Change
First Repository			
Basalt	$179.8	$110.2	-39
Tuff	176.5	105.4	-40
Salt	185.5	66.3	-64
Technical Support	-----	25.3	--
Subtotal	541.8	307.4	-43
Second Repository	19.8	19.8	--
Monitored Retrievable Storage	46.0	20.0	-57
Transportation and Systems Integration	33.4	26.0	-21
Program Management and Technical Support	69.5	46.8	-33
TOTAL	$710.5	$420.0	-41

NOTE: If the $79 million becomes available, $73 million will be allocated to the First Repository and $6 million to Transportation and Systems Integration.

TABLE 6

NUCLEAR WASTE POLICY ACT MILESTONES
SECOND REPOSITORY
COMPARISONS WITH NWPA, FY 1986 BUDGET REQUEST,
JUNE 1985 MISSION PLAN, FY 1987 BUDGET REQUEST,
IF MISSION PLAN AMENDMENT APPROVED,
IF MISSION PLAN AMENDMENT NOT APPROVED

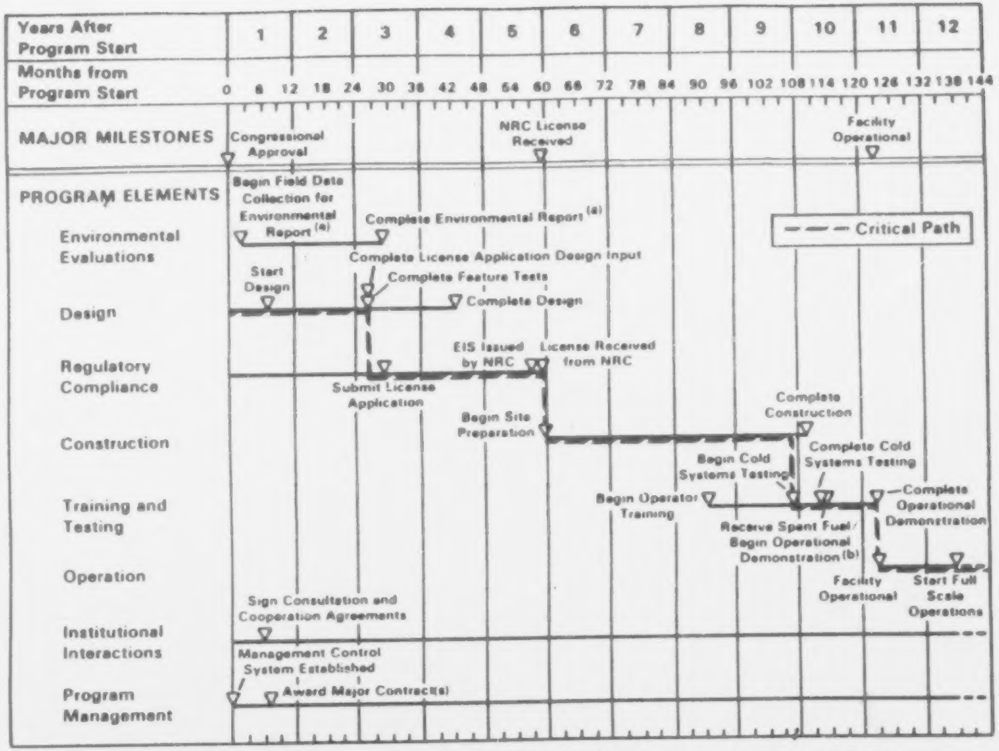
	NWPA Requirement	FY 86 Bud.Req.	1985 MISSION PLAN	FY 87 Bud.Req.	If MISSION PLAN AMENDMENT	
					Approved	Not Approved
Begin National Survey	---	---	1981	---	1995	
Complete National Survey	---	---	4/83	---	1997	
Issue Draft Regional Geologic/ Environmental Characterization Reports	---	---	5/83	---	1999	
Issue Draft Region-to-Area Screening Methodology	---	---	9/84	---	2000	
Issue Revised Draft Geologic/ Environmental Characterization Reports	---	12/84	12/84	---	---	
Issue Final Region-to-Area Screening Methodology	---	4/85	4/85	4/85	2001	
Issue Final Geologic/ Environmental Characteriza-tion Reports	---	7/85	7/85	9/85	2001	

(TABLE 6, cont'd.)

					If MISSION PLAN AMENDMENT	
	NWPA Requirement	FY 86 Bud.Req.	1985 MISSION PLAN	FY 87 Bud.Req.	Approved	Not Approved
Issue Draft Area Recommendation Report	---	11/85	1/86	1/86	2002	
Begin review of more than 60,000 comments received	---	---	---	---	---	10/87
Complete review of comments	---	---	---	---	2002	10/88
Issue Final Area Recommendation Report	---	5/85	5/86	11/86	2003	12/89
Issue Final Area Characterization Plan	---	9/86	12/86	11/87	2003	12/89
Begin area field investigations	---	9/86	12/86	11/87	2003	1990
Identify potentially acceptable sites	---	---	TBD	11/86	2003	1990
Complete area field investigations	---	---	1/90	---	2007	1994
Issue final environmental assessments	---	---	9/91	---	2007	1994
Nominate and recommend sites for characterization	7/1/89	7/91	10/91	1993	2007	1994
President approves recommended sites for characterization	---	---	12/91	---	2007	1994

(TABLE 6, cont'd.)

	NWPA Requirement	FY 86 Bud.Req.	1985 MISSION PLAN	FY 87 Bud.Req.	If MISSION PLAN AMENDMENT	
					Approved	Not Approved
Issue initial site characterization plans	---	---	1/93	---	2008	1995
Request Congressional approval for construction	---	---	6/93	---	2008	1995
Initiate Construction of Exploratory Shafts	---	---	6/93	---	2008	1995
Issue Final EIS	---	---	12/93	---	2016	2001
President recommends site to Congress	3/31/90	1997	3/98	1999	2016	2001
Site designation effective	---	---	5/98	---	2017	2002
Submit license application to NRC	---	1997	5/98	---	2017	2002
NRC issues Construction Authorization	---	1999	8/2000	---	2020	2005
Initiate 2nd repository construction	---	---	8/2000	---	2020	2005
NRC issues License for Operations	---	---	5/2006	---	2023	2010
Begin operations	---	---	6/2006	---	2023	2010



(a) The precise nature of this document will be dependent on the provisions of any authorizing legislation.

(b) The shipment of spent fuel to the MRS facility is contingent upon receipt of a construction authorization for the first repository. The revised schedule for the first repository in the Draft Mission Plan Amendment contemplates receipt of such authorization by the first quarter of 1998.

TABLE 7 - MRS Deployment Schedule

TABLE 8

NUCLEAR WASTE FUND

REVENUES AND EXPENDITURES
(Through March 31, 1987)

(Dollars in billions)

o	Revenues		
	- On-Going Fee	$1.35	
	- One-Time Fee	1.44	
	- Interest Earned	.25	
	TOTAL Revenues	3.04	
o	Expended	1.38	
o	Amount Paid for Purchase of Investment Portfolio 1/		1.66
o	Equipment Assets		0.03
	BALANCE		1.69

1/ The market value of a portfolio represents the proceeds that would be expected if the portfolio were to be liquidated at a point in time. As of March 31, 1987, the market value of the Nuclear Waste Fund portfolio was $1.72 billion.

PRE-HEARING QUESTIONS AND ANSWERS
RELATING TO THE APRIL 23, 1987, HEARING

BEFORE THE

SUBCOMMITTEE ON NUCLEAR REGULATION
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

WITNESS: SECRETARY JOHN S. HERRINGTON

QUESTIONS FROM SENATORS BREAUX AND SIMPSON

Question 1: In Volume I of the Department's MRS report, the Department makes the following two statements:

> "The DOE has entered into contracts with the owners and generators of spent nuclear fuel and high-level waste. The contract provides for the DOE's acquisition of title to the spent nuclear fuel and high-level waste, transportation, and subsequent disposal. *Under the contract, these services are to be provided 'after commencement of facility operations, not later than January 31, 1998.' The MRS facility would allow the DOE to begin receiving waste for disposal by 1998."* (emphasis added) (p. 22)

> "Given this extension of the first-repository schedule and the DOE's recommendation that MRS operations start only when the construction authorization for the first repository has been received, the MRS facility would start receiving waste in the first quarter of 1998 and be the only CRWM facility available at that time. *Thus, the MRS facility would be critical to the DOE's ability to accept waste for disposal in 1998."* (Emphasis added). (p. 2)

Question 1(a): Please explain these statements. What is the nature of the Department's contractual obligation with regard to -- (i) taking of title to spent nuclear fuel or high-level radioactive waste; (ii) disposal of spent nuclear fuel or high-level radioactive waste; (iii) storage of spent nuclear fuel or high-level radioactive waste, and (iv) the January 31, 1998 date in section 302(a)(5)? Please be specific.

Answer:	As required by Section 302 of the Nuclear Waste Policy Act (NWPA), the Department entered into contracts with the owners and generators of spent nuclear fuel (SNF) and high-level radioactive waste (HLW). The "Standard Contract for Disposal of Spent Nuclear Fuel and/or High-Level Radioactive Waste," developed as part of the public rulemaking process (finalized in the Federal Register, 48 FR 16590, April 18, 1983), requires DOE to accept title, transport, and dispose of SNF and HLW. According to Article II of the contract, "the services to be provided by DOE under this contract shall begin, after commencement of facility operations, not later than January 31, 1998...." The contract does not include providing services for storage of SNF and/or HLW which, under Section 111(a)(5) of the NWPA, is the responsibility of the owners and generators until it is accepted by the Secretary of Energy.
Question 1(b):	**Is the MRS facility necessary in order to enable the Department to meet its legal obligations, under either the NWPA or the contracts with utilities? If so, please identify specifically what those obligations are, together with references, where appropriate, to the utility contract. In addition, please provide the supporting legal analysis for your conclusions.**

Answer: With the 5-year delay of the first repository proposed in the Draft Mission Plan Amendment, the MRS becomes essential to meeting the January 31, 1998 date for beginning the waste acceptance process specified in Section 302(a)(5) of the NWPA and Articles II and IV B of the contract. The services set forth in Article IV B of the contract include acceptance of title to spent fuel by DOE, provision of subsequent transportation for such material to a DOE facility, and disposal of such material in accordance with the terms of the contract. The supporting legal analysis is provided as part of the responses to Questions 1(c), 2 and 4 below.

Question 1(c): Do you view the MRS facility as either a "disposal" facility or a facility in which to "dispose of" spent nuclear fuel?

Answer: No. The MRS is viewed as a DOE facility as defined in Article I 10 of the contract, which would be an integral part of the waste disposal system. That definition expressly includes a facility to which spent fuel "may be shipped by DOE prior to its transportation to a disposal facility." The purpose of that definition was described in the preamble of the final rule adopting the contract terms "to expressly state, in accordance with the Act, that there may be an interim storage facility ... which DOE may utilize prior to emplacement in a repository." (48 FR 16591, April 18, 1983).

QUESTIONS FROM SENATORS BREAUX AND SIMPSON

Question 2: Please identify all facilities that would satisfy the requirement of Section 302(a)(5) of the NWPA that "the Secretary, beginning not later than January 31, 1998, will dispose of high-level radioactive waste or spent nuclear fuel." In this regard, does the Department construe the term "dispose of" to encompass facilities other than those that would fall within the definition of "disposal" in Section 2(9) of the NWPA?

Answer: As identified in the response to Question 1(c) above, acceptance of SNF and/or HLW at a repository for disposal or for pre-disposal packaging and/or storage at an MRS facility beginning January 31, 1998 would comply with the contract requirements that were based on the NWPA, including Section 302(a)(5)(B) of that statute. The question of the Section 2(9) definition of "disposal" encompassing facilities other than a repository is discussed in the response to question 4(a), below.

QUESTIONS FROM SENATORS BREAUX AND SIMPSON

Question 3: Does DOE intend to take title to spent nuclear fuel or high-level waste, prior to transporting this material to the MRS?

Answer: Yes, since Articles II and IV B of the contract specify title acceptance as the initial step in the performance of services provided by DOE under the contract.

QUESTIONS FROM SENATORS BREAUX AND SIMPSON

Question 4: Please provide the Department's position, including the supporting legal analysis, on the following questions regarding Section 302(a)(5) of the NWPA:

Question 4(a): Does this provision, or the contracts entered into pursuant to this provision, require the Department to have a repository in operation by January 31, 1998? If so, what legal recourse does a party with whom the Department has entered into a contract under this provision have if a repository is not in operation by that date? Is the Department obligated to take title to spent nuclear fuel or high-level radioactive waste in this situation by January 31, 1998?

Answer: It is the Department's intent to begin accepting spent fuel in 1998. With respect to contract obligations, it is the General Counsel's opinion that:

> The threshold question is whether, in view of the definition of "disposal" in Section 2(9) of the NWPA as "emplacement within a repository," this provision in substance requires that a repository have commenced operations by January 31, 1998. */ This question requires examination whether the duty to "dispose" of SNF and/or HLW required to be included in the contracts by Section 302(a)(5)(B) is confined to the statutory term "disposal" specified in Section 2(9) of the NWPA. For the reasons set forth below, we doubt that the terms were intended to have identical meanings, and thus the use of the word "dispose" in Section 302(a)(5)(B) was not intended as a statutory mandate that the first repository begin operations by that date. The first reason for this view

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*/ Since the term "repository" is defined as a system used for "permanent deep geological disposal" of spent fuel and the term "storage" is defined as "retention of...spent nuclear fuel...for subsequent disposal," it is doubtful that a storage facility alone could be regarded as a "repository." NWPA Secs. 2(18), 2(25), 42 U.S.C. 10101 (18), (25).

is that this section's immediate companion would have been the logical place within Section 302(a)(5) to address the question when a repository would be required to begin operations. Section 302(a)(5)(A) reads as follows:

"[F]ollowing commencement of operation of a repository, the Secretary shall take title to the high-level radioactive waste or spent nuclear fuel involved as expeditiously as practicable upon the request of the generator or owner of such waste or spent nuclear fuel...."

Had Congress intended in Section 302(a)(5) to specify a date by which a first repository was to begin operations, the logical point at which to express this policy would have been that section's subsection that deals expressly with "commencement of operation of a repository." Instead it refrained from specifying a date certain for commencement of repository operations, but required only that, once a repository has begun operations, the Secretary shall act with expedition to take title to SNF and/or HLW on the request of the generator or owner of such SNF and/or HLW.

A second indication that the Congress did not, through use of the term "dispose" in Section 302 (a)(5)(B), indirectly mandate commencement of first repository operations by 1998 is that that subsection goes on to describe the duty to "dispose" of spent fuel in the manner "as provided in this subtitle." Section 302(a)(5)(B) appears in Title III of the NWPA which title is not structured as to have subtitles. It is clear, however, that inclusion of the words "this subtitle" meant something other than the entirety of the NWPA. It could mean the entirety of Section 302 within which the subsection appears, which describes in detail the Secretary's authority to enter into contracts with generators or owners of SNF and/or HLW, specifies the fees to be paid by owners and generators for the services to be rendered by the Secretary in accepting SNF and/or HLW, requires annual subsequent review of those fees by the Secretary, conditions Nuclear Regulatory Commission license issuances or renewals for utilization or production facilities on entry into a contract for disposal of spent fuel, and establishes the Nuclear Waste Fund that is to finance the nuclear waste program.

None of these provisions deals even remotely with procedures or the schedules leading to commencement of operation of the first repository. Similarly, if one interprets the use of the words "this subtitle" as having been intended to relate the contract obligation to "dispose" of spent fuel "beginning not later than January 31, 1998" to the entirety of Title III of the NWPA, the only provision remotely germane to the time by which the first repository will begin operations is Section 301, which imposes the requirement to formulate and submit to the Congress the original Mission Plan. If anything, such a construction would suggest that the requirement to contract to "dispose" of spent fuel beginning in 1998 would be fulfilled in the manner specified in the Mission Plan.

4(b): If this provision does not require the Department to have a repository in operation by January 31, 1998, does this provision, or the contracts entered into pursuant to this provision, impose any legal obligation on the Department to do any of the following by January 31, 1998 -- (i) take title to spent nuclear fuel or high-level radioactive waste? (ii) provide some alternative means for storing or disposing of such spent nuclear fuel or high-level radioactive waste? Aside from any legal obligation that the Department might have, has the Department decided as a matter of policy that, beginning January 31, 1998, it intends to -- (i) take title to spent nuclear fuel or high-level radioactive waste? (ii) provide some alternative means for storing or disposing of such spent nuclear fuel or high-level radioactive waste?

Continuing the General Counsel's opinion:

> As stated in the response to Question 4(a), above, we believe Section 302(a)(5) and the contracts impose a legal obligation on the Secretary after commencement of repository operations to take title to spent fuel promptly on request, but does not foreclose the Secretary from taking title to SNF and/or HLW in advance of commencement of repository operations if that step is necessary and appropriate in fulfilling the terms of the contract by which the program is implemented.

In a September 7, 1984 letter to Senator J. Bennett Johnston, former Secretary Hodel expressed the Department's intention to "... create an obligation for the Department to accept spent fuel in 1998 whether or not a repository is in operation." Consistent with this expressed intention, the Department plans to issue, beginning in July 1987, an Annual Capacity Report for planning purposes. As required by Article IV B(5) of the contract, the report will inform utilities of the amount of spent fuel the Department intends to accept beginning in 1998. This information will become contractually binding upon the Department effective April 1991.

Should delays prevent any DOE facility as defined in Article I 10 of the contract from allowing the Secretary of Energy to begin providing services by January 31, 1998, then Article IX of the contract becomes operative. Under this section, avoidable delays (within the "reasonable control" of DOE or utility) allow for an equitable adjustment of charges and schedules to reflect additional costs incurred, while unavoidable delays ("beyond the control and without fault or negligence" of DOE or utility) result in no liability and require only a readjustment of schedules to accommodate the delay. The Department has made no policy decisions as to what actions it may pursue should no DOE facility be available and has not explored how and under what conditions the terms of Article IX of the contract may be implemented.

QUESTIONS FROM SENATORS BREAUX AND SIMPSON

Question 5: Please provide all documents, both draft and final, in which any of the issues identified in questions 1-4 are discussed; in addition, please provide all documents, both draft and final, in which the Department's obligations under the contracts entered into pursuant to this provision are discussed, including any documents discussing the obligation to take title, the obligation to dispose of high-level radioactive waste or spent nuclear fuel, and any documents discussing the role of an MRS facility in satisfying the statutory obligations imposed by section 302(a)(5).

Answer: The requested documents will be forwarded under separate cover as soon as possible.

QUESTIONS FROM SENATORS BREAUX AND SIMPSON

Question 6: According to your MRS proposal, the definitive design for the MRS will not be complete at the time that you submit your license application to the NRC. When will the definitive design be submitted to the NRC and what information will be included in this submission that is not addressed in your license application? In its comments on DOE's proposal, the NRC noted that the proposed schedule was contingent upon the submission of a license application that was complete and technically sound. Does the NRC concur in your approach to defer submission of the definitive design information? Does the NRC agree that this facility can be licensed in 30 months, on the schedule that you propose for submitting the definitive design?

Answer: The NRC regulations do not require that the definitive design be submitted to the Commission. The regulations require that the license application (LA) be technically sound and address completely a broad range of questions concerning systems, structures, and components that are important to safety, as delineated in 10 CFR 72. The design of these systems would be complete at the time the LA is submitted. The range encompasses not only design questions but also questions related to construction, operation, and decommissioning.

The DOE did not ask the Commission whether the facility could be licensed in 30 months. However,

Answer 6 (cont'd)

the NRC staff has indicated to the DOE that they believe that their review and evaluation of the LA, the portion of the licensing process that is within their scheduling control, would be completed within 18 months after submission of a complete LA. The DOE believes that a somewhat shorter review time can be achieved, in view of the extensive formal topical reports and informal reviews of the facility that the DOE will provide for the staff before submittal of the LA. Such facility reviews began during the conceptual design and resulted in the NRC's "Staff Evaluation of U.S. Department of Energy Proposal for Monitored Retrievable Storage", NUREG-1168 (March 1986). Neither the NRC staff nor the DOE can predict how long the hearing process will take after completion of NRC staff review and evaluation. The DOE believes that a period of 12 to 18 months should be allocated to the hearing process. Based upon the experience with the LA for the Morris Storage facility, this is an adequate period of time.

QUESTIONS FROM SENATORS BREAUX AND SIMPSON

Question 7: With regard to DOE's proposed 30-month licensing schedule for the MRS, the NRC staff has indicated that the Commission will need 18 months to perform the necessary technical review, leaving 12 months for a public hearing. Furthermore, the staff has indicated that a full adjudicatory proceeding encompassing NEPA issues, safety issues, and full state and Indian tribe participation cannot reasonsbly be accomplished in 12 months (see SECY 86-9). Does the DOE proposal assume a full adjudicatory NRC licensing proceeding encompassing NEPA issues, safety issues, and full state and Indian tribe participation? If so, do you agree with NRC's assessment of the time that would be required for such a proceeding? If not, what is your view of the time that will be required, or, alternatively, the issues or parties that will be included in such a proceeding? If the proceeding will take longer than 12 months, please identify the impact this will have on the schedule assumptions underlying the MRS proposal, including the impact on spent fuel storage requirements, fuel acceptance schedules for the repository, and DOE's obligations under Section 302(a)(5) of the NWPA.

Answer: It is understandable that the NRC staff would hesitate 1) to assure the Commissioners that their review would take less than 18 months, and 2) to predict that the hearing process would take no more than 12 months. The NRC does not today have the information they need to determine unequivocally a licensing schedule.

The DOE utilized the best information available to establish their allocation of time for the licensing process: 12 to 18 months for the staff

Answer 7 (cont'd)

review, and 12 to 18 months for the hearing process and final action on the LA by the Commission. The total time allotted was 30, plus or minus 6, months. Though the DOE anticipates that the NRC will give full consideration to comments or contentions from states, Indian tribes, and other interested parties on all NEPA and safety issues, there can be no certainty in any schedule for the resolution of potential contentious issues. If the NRC reviews and public hearings take longer than 30 months, the DOE has the option of reducing the construction or startup time by occasional use of additional construction shifts, use of quick-drying concretes, or by the paralleling of some activities now contemplated to be sequential. Furthermore, in view of the proposed delay in the construction authorization of the repository and because DOE has proposed linking startup of the MRS to receipt of the repository construction authorization, there is about one year of additional time in the critical path schedule that can be allocated, in the future as needed, to negate the impact of any design, licensing, or construction delays. Thus, the DOE

Answer 7 (cont'd)

does not now foresee any schedule impact on the availability of the MRS facility by 1998.

QUESTIONS FROM SENATORS BREAUX AND SIMPSON

Question 8: The NRC has recently proposed a change in its licensing requirements for an MRS to provide for a discretionary hearing after construction is complete and prior to the first receipt of spent fuel, for the purpose of determining whether the MRS has been constructed in conformity with the SAR and whether any significant new information important to the safety of the MRS operations has been revealed since issuance of the license. Does DOE support such a change? Does the schedule in the MRS report take into account the possibility of such a hearing? If the NRC decides to adopt a requirement providing for a discretionary hearing prior to receipt of spent fuel at an MRS and to grant such a hearing, what impact will this have on the Department's proposed schedule for the MRS? In this regard, please discuss the impact of the time required for such a hearing on spent fuel storage requirements, fuel acceptance schedules for the repository, and DOE's obligations under Section 302(a)(5) of the NWPA.

Answer: The DOE does not believe that a second-stage hearing process is needed for a one-step licensing process like that now embodied in 10 CFR 72. The DOE believes that it is inappropriate and unnecessary to make explicit provisions for a second stage hearing in a process that is designed for a single step to license a facility with a complete design. The regulations provide adequate opportunity for additional hearings if new issues are identified that could have a major impact on public health and safety. A single stage process would further encourage early identification and resolution of significant issues before, rather than after, construction.

Answer 8 (cont'd)

The proposed DOE schedule does not include a period of time for a discretionary hearing. We believe that the NRC and the interested public should bring forth any new safety issues in a timely manner and not await completion of construction of the facility.

The DOE cannot assess today the impact of a requirement for a future discretionary hearing. If such a requirement were adopted by the NRC, however, the DOE would not add time to our schedule, since the DOE intends to abide strictly by the conditions of the license and to resolve potential new safety issues with NRC in a timely manner as they arise.

QUESTIONS FROM SENATORS BREAUX AND SIMPSON

Question 9: **How long will it be between DOE's submission of its "Final Semiannual SAR Update and Final Tech. Spec." and the initial receipt of spent fuel?**

Answer: The schedule in the Program Plan, Volume III of the MRS Submission to Congress, shows the Final SAR update being submitted to NRC three months prior to the receipt of spent fuel. The submittal may actually occur one to two months earlier.

QUESTIONS FROM SENATORS BREAUX AND SIMPSON

Question 10: Please provide the basis for the following statement:

> "Since the MRS facility would begin operations in 1998, the waste-acceptance rates of the waste-management system would start exceeding reactor-discharge rates 8 years earlier than would otherwise be possible. Without an MRS facility, up to 13,500 MTU of new temporary storage capacity would be needed at about 45 reactors by the year 2003." (Vol. I, p.22)

Identify the specific reactors referred to and the available and planned on-site storage capacity for these reactors. In addition, please provide the Department's latest estimates of spent fuel storage requirements and available and planned on-site storage capacity for all reactors.

Answer: The subject statement has as its basis an analysis that was performed in 1986 on the impacts of a repository not being operational by 1998. The study looked at the need for additional at-reactor storage for repository operational dates ranging from 1998 to 2005 both with MRS facility operational dates of 1996, 1998, 2000 and with an MRS facility not authorized.

The Energy Information Administration (EIA) collects data from the utilities for the Office of Civilian Radioactive Waste Management. This data (collected under the RW-859 Nuclear Fuel Data Form) includes information on projected spent fuel discharge quantities, present storage pool

Answer 10 (cont'd)

capacity, maximum projected storage pool capacity (as indicated by studies completed by the utility), and other plans for on-site storage of spent fuel. These surveys are completed each year and are certified to be accurate as of the end of the calendar year. Following data collection by EIA, the utility data is modified so that the aggregate from all reactors equals the total spent fuel discharges forecast by EIA in the annual Commercial Nuclear Power report series. This will ensure the data matches historical operating capacity factors rather than the optimistic capacity factors predicted by the utilities.

The quoted statement in the question was based on data as of the end of CY-1984 and reported in CY-1985. Since the time these analyses were performed, new data, based on CY-1985 utility data, has become available. The new data reflects changes in pool capacities and in discharge projections. In addition, data has recently been received from the utilities effective the end of CY-1986. This data will not be reviewed, modified, and available for analysis before September, 1987.

Answer 10 (cont'd)

All analyses by the Department are based on "Maximum Pool Capacity" rather than "Present Pool Capacity." This means that the Department assumes that the utilities will rerack their pools to the maximum extent indicated by their analysis. New technologies and analysis methods are being introduced by vendors which will enable expansion of the storage capacities at many reactor sites. If utilities have not yet completed analysis of their maximum pool capacity based on these new methods and technologies, the "Maximum Capacity" indicated will be lower than the actual maximum capacity.

In addition, the Department assumes that utilities will seek to maintain a capability to discharge the reactor core (referred to as Full Core Reserve). A single FCR is assumed to be maintained for all units at multiple reactor stations employing either a single common spent fuel storage pool, or separate pools with interconnections allowing spent fuel transfer between them.

Answer 10 (cont'd)

The spent fuel acceptance strategy employed in the analysis gave first priority to accepting spent fuel from reactors projected to discharge fuel in excess of their pool storage capacity. Given this approach, the analysis identified 45 reactor sites (62 reactors) which would have spent fuel discharges in excess of their pool capacity and in excess of the spent fuel accepted from the reactor by the waste management system for the case of a repository becoming operational in 2003 and no MRS facility in the system. The attached table identifies these reactors by name and provides the spent fuel storage pool maximum projected capacity and inventory, as reported by the utilities in 1984. ("Spent Fuel Storage Requirements, DOE/RL-85-2," October, 1985, copy enclosed).

The latest information available relating to spent fuel on-site storage capacity for reactors is contained in the report "Spent Fuel Storage Requirements," DOE/RL-86-5, October 1986 (copy enclosed). This report contains estimates of potential near-term requirements for additional

Answer 10 (cont'd)

spent fuel storage capacity based on information supplied by the nuclear utilities to EIA as of the end of 1985, or one year later than the data utilized for the analysis supporting the statement in the proposal that is the subject of this question. This latest report shows a reduction in additional storage requirements compared to the preceding report. A preliminary estimate of the effect that the use of this more recent data would have on the Department's estimate of the new temporory storage capacity that would be needed if there were no MRS facility in the waste management system and the repository begins operating in the year 2003 is a reduction of about 15 percent from the previous estimate.

Tables A.1 and A.2a. of the enclosed report provide information on available on-site storage capacity for all reactors not including the quantity associated with any cooperative demonstration programs with the Department.

Answer 10 (cont'd)

Table A.1. presents the maximum projected storage pool capacity in number of fuel assemblies for each reactor, as reported by the utilities. Table A.2a. presents the storage pool spent fuel inventory as of the end of year 1985 in number of assemblies. The difference between the number found in these two tables for a given reactor is the remaining potential on-site spent fuel storage capacity.

Answer 10 (cont'd)

ATTACHMENT TO ANSWERS TO QUESTIONS 10 AND 11

Reactor Name	Potential Storage Pool Maximum Capacity	Storage Pool 1984 Inventory	Year of Loss of Pool Storage Capacity
	(# of fuel assemblies)		
1. Millstone 2	667	376	1985
2. Surry 1, 2	1044	477/349	1986
3. St. Lucie 1	728	372	1987
4. Palisades	798	477	1987
5. Oconee 1, 2	1312	494/380	1987
6. Peachbottom 2	2608	1522	1988
7. Brunswick 2	1839	752	1990
8. Robinson 2	544	222	1990
9. Pilgrim 1	2320	1123	1990
10. LaSalle City 1, 2	1080/1080	0	1991
11. Prairie Island 1, 2	1117	320/321	1991
12. Fitzpatrick	2244	816	1992
13. LaCrosse	440	213	1992
14. Calvert Cliffs 1, 2	830/1000	468/391	1993
15. Fort Calhoun	729	305	1993
16. Cooper Station	2366	914	1994
17. Indian Point 3	840	216	1994
18. Davis Besse 1	735	197	1994
19. Byron 1, 2	1050	0/0	1995
20. Big Rock Point	441	172	1995
21. Oyster Creek 1	2600	980	1995
22. Point Beach 1, 2	1502	394/379	1995
23. Beaver Valley	835	218	1995
24. Enrico Fermi 2	2305	0	1995
25. Braidwood 1, 2	1050	0/0	1996
26. Maine Yankee	1476	721	1996
27. Zion 1, 2	2079	433/422	1996
28. Arkansas Nuclear 1	968	384	1996
29. Sequoyah 1, 2	1386	140/136	1997
30. Cook 1, 2	2270	466/336	1998
31. San Onofre 1, 2, 3	216/800/800	94/65/ 0	1998
32. Haddam Neck	1168	545	1998
33. Dresden 2	3537	1312	1998
34. Kewaunee	963	336	1998
35. Browns Ferry 2	3471	1188	1998
36. North Anna 1, 2	1737	250/174	1998
37. WNP 2	2658	0	1998
38. Perry 1, 2	1620/2400	0/0	1999
39. Nine Mile Point 1	3000	1244	1999

Answer 10 (cont'd)

40.	Vermont Yankee	2700	1202	1999
41.	Duane Arnold	2050	576	1999
42.	Watts Bar 1, 2	1312	0/0	2000
43.	Limerick 1	2862	0	1998
44.	Hatch 1, 2	3181/2845	957/446	2001
45.	Salem 1	1170	271	2002

QUESTIONS FROM SENATORS BREAUX AND SIMPSON

Question 11: Please provide the basis for the following statement:

> "It has been estimated that the deployment of an MRS facility consistent with the Draft Mission Plan Amendment would preclude the need for additional storage capacity at more than 15 reactor sites and could offset more than 10,000 MTU of at-reactor storage. If this incremental at-reactor storage costs $100,000 per metric ton, the result could be a savings of $1 billion at the reactor sites.
> (Vol. I, p. 26)

Identify the specific reactors referred to and the available and planned on-site storage capacity for these reactors. In addition, please identify the basis for the cost estimates for expanding at-reactor storage capacity and the type of storage capacity involved. What is the projected cost of dry cask storage?

Answer: The basis for the subject statement is the analysis previously described in the answer to Question 10. The specific reactors referred to (23 reactors at 15 sites) are those numbered 30 through 45 found in the attached table previously described in and attached to the answer to Question 10. This table also presents the available on-site storage capacity for these reactors. The Department is not aware of any current or planned activities to increase on-site storage capacity at these reactor sites beyond those indicated in the responses to the EIA/RW-859 Nuclear Fuel Data Form which are included in the DOE estimates.

Answer 11 (cont'd)

The basis for the estimated incremental at-reactor storage cost of $100,000 per metric ton is the estimated cost of dry storage in metal storage casks. This is potentially the most costly of the options under study (i.e., in-pool rod consolidation, dry storage in concrete modules or silos and dry well storage) but it is the most developed and demonstrated option to date. The $100,000 per metric ton "high-level" cost estimate for dry storage in metal casks was based on the best available information at the time. A more recent estimate puts the cost of dry storage in metal casks in the range of $85,000-$125,000 per metric ton. For this estimate the range is a function of high-cost and low-cost design approaches and high and low estimates of the total amount of fuel requiring dry storage at a particular site (i.e., the amount of fuel over which fixed site costs are spread). None of the estimates presented above account for costs of any

Answer 11 (cont'd)

checks or tests of the fuel that may be required during its term in dry storage or upon removal from dry storage.

QUESTIONS FROM SENATORS BREAUX AND SIMPSON

Question 12: If the Congress authorizes DOE to construct an MRS facilility in accordance with the proposal submitted to Congress, with no further modification, please identify all procedural and substantive rights that a State or an affected Indian tribe would have under the Department's proposal and the existing NWPA with respect to the decisionmaking process for the construction and operation of such a facility. In addition, provide a side-by-side comparison of such rights with the rights of a State or an affected Indian tribe with respect to the decionmaking process for the construction and operation of a repository.

Answer: The NWPA in Section 141 (h) provides that any MRS facility authorized be subject to the provisions of sections 115, 116(a), (b) and (d), 117 and 118. section 141(h) specifically excludes section 116(c), the financial assistance provisions with regard to the participation of States. The MRS provisions under 141(f) include requirements for impact assistance to appropriate units of general local government. These payments are to be used by the affected units of general local government only for planning, construction, maintenance and provision of public services related to siting the MRS.

Section 115, REVIEW OF REPOSITORY SITE SELECTION, includes seven subsections: (a) DEFINITIONS- defines "resolution of repository siting approval,"

Answer 12 (cont'd)

as a joint resolution of the Congress; (b) STATE OR INDIAN TRIBE PETITIONS-provides that the designation of site is effective 60 days after President's recommendation unless affected party issues notice of disapproval; (c) CONGRESSIONAL REVIEW OF PETITIONS-provides 90 days for Congress to review any notice of disapproval from affected parties; (d) PROCEDURES APPLICABLE TO THE SENATE-defines the procedures the Senate must use to consider any notice of disapproval; (f) COMPUTATIONS OF DAYS-defines calculation of days for Congressional consideration of any notice of disapproval; and, (g) INFORMATION PROVIDED TO CONGRESS-in considering any notice of disapproval, Congress may obtain comments from the NRC.

Section 116, "PARTICIPATION OF STATES", includes four subsections: (a) NOTIFICATION OF STATES AND AFFECTED TRIBES-this subsection provides for the notification of States or Tribes with potentially acceptable sites within specified time periods, where potentially acceptable sites are specifically defined; (b) STATE PARTICIPATION IN REPOSITORY SITING DECISIONS-this subsection provides the State the authority to submit a notice of disapproval;

Answer 12 (cont'd)

(c) FINANCIAL ASSISTANCE-this subsection provides for grants to participate in the activities required in Sections 116 and 117, impact mitigation following NRC construction authorization, grants equal to taxes, grants limitations, funding limitations, and that such financial assistance be paid from the Nuclear Waste Fund; and, (d) ADDITIONAL NOTIFICATION AND CONSULTATION-this subsection provides that whenever the DOE notifies or consults with an affected Tribe the DOE shall also consult with the State in which the Tribe is located.

Section 117, CONSULTATION WITH STATES AND AFFECTED INDIAN TRIBES, includes three subsections: (a) PROVISION OF INFORMATION-this subsection directs the DOE and NRC to provide host States and affected Tribes timely and complete information; (b) CONSULTATION AND COOPERATION-this requires that the Secretary shall consult and cooperate with the affected host State and Indian Tribe in an effort to resolve the concerns regarding the public health and safety, environmental, and economic impacts of any facility; and, (c) WRITTEN AGREEMENT-this requires that the Secretary shall seek to enter into binding

Answer 12 (cont'd)

written agreements with the affected host State and Indian Tribe and if such written agreement is not completed, the Secretary must report to the Congress on why such agreement was not completed, and provide detailed listing of the items to be included in the written agreement.

Section 118, PARTICIPATION OF INDIAN TRIBES, includes two subsections: (a) PARTICIPATION OF INDIAN TRIBES IN REPOSITORY SITING DECISIONS-this provides authority for an affected Indian Tribe to submit a notice of disapproval; and, (b) FINANCIAL ASSISTANCE-this subsection provides for grants for Indian Tribes to participate in the activities required in Sections 116 and 117, impact mitigation following NRC construction authorization, grants equal to taxes, grant limitations, funding limitations, and that such financial assistance be paid from the Nuclear Waste Fund.

These provisions provide significant procedural and substantive rights to a State or affected Indian Tribe throughout the entire decisionmaking process of the repository program and, except as noted below, are directly applicable to an authorized MRS

Answer 12 (cont'd)

through 141(h). As indicated above the Act does not provide identical treatment for the MRS host State compared to the repository host State in the financial assistance area. Because the MRS, as the Department has proposed it, is an integral part of the commercial waste management system, the Department has included recommendations in the MRS proposal to provide comparable financial assistance rights.

The MRS proposal recommends additional NWPA provisions to ensure procedural and substantive rights of the State and local governments to participate throughout every phase of the proposed MRS project. Specifically, the MRS proposal provides for the establishment of an MRS Steering Committee to further ensure active and substantive participation of affected parties. The Committee will provide a mechanism for State and local involvement in all aspects of the implementation of the MRS project and for obtaining input, including recommendations and evaluations, regarding the design, construction, operation, and decommissioning of the proposed MRS facility. The Steering Committee would provide oversight,

Answer 12 (cont'd)

guidance, conduct performance evaluations, and recommend corrective actions. State and local governments would have representatives of their choosing as members of the Steering Committee. The Steering Committee will have the authority to convene and maintain specialized subcommittees to review or provide oversight on particular areas of interest or concern. As proposed, there will be a subcommittee on environment, safety, and health; a subcommittee on transportation; a subcommittee on public information; and a subcommittee on financial matters.

A detailed explanation of the proposed MRS Steering Committee is provided in Volume 1 of the MRS proposal.

Section 141(f) of the Act mandates impact aid payments to units of general local government in order to mitigate any social or economic impacts resulting from the construction and operation of an MRS facility, but the Act is silent regarding measures beyond those applicable to units of general local government. Section 116(c) of the Act addresses financial assistance to the States

Answer 12 (cont'd)

involved in the repository program, but this section is not made applicable to the MRS program. Nonetheless, on the basis of information provided by the DOE, the State has identified social and economic impacts beyond those that would affect just local jurisdictions, and the DOE believes that actions to address these impacts as well are appropriate. Accordingly, DOE proposed measures that would go beyond the limited requirements of section 141(f) while also meeting those requirements.

Separate and apart from any assistance for mitigating social or economic impacts and payments equivalent to taxes, the DOE would fully reimburse the State for reasonable and direct expenses incurred in association with the MRS facility. The designation of eligible activities would be accomplished through the consultation-and-cooperation agreement.

Financial assistance is proposed for two different MRS phases: the period preceding MRS operations and the period commencing with the start of operations and continuing through decommissioning.

Answer 12 (cont'd)

The financial assistance programs proposed for these two phases would be defined in consultation with, and administered through, the State and local governments. In the proposal, the DOE recommends that, if the Congress approves this proposal, sufficient monies be provided annually to address State and local concerns during the preoperational phase. The financial assistance proposed for the operational period is payments based on the operations or the assessed value of the facility; such payments would be similar to the taxes paid by taxable facilities.

QUESTIONS FROM SENATORS BREAUX AND SIMPSON

Question 13: **Please provide cost estimates for the steps that DOE proposes in the chapter entitled "Recommendations for Institutional Provisions." Which of these forms of financial assistance can be provided under the existing statutory authority?**

Answer: Chapter 4 of the MRS proposal discusses "Recommendations for Institutional Provisions," and specifically discusses five types of financial assistance intended for a State and/or local government hosting an MRS. The five types of financial assistance are: impact assistance/aid, reimbursements for direct expenses incurred in association with MRS, annual pre-operational payments during facility construction, annual post-operational payments during operation, and other appropriately negotiated payments.

The Department has current authority to fund impact assistance/aid under section 141(f) of the NWPA to units of general local governments in order to mitigate any social or economic impacts resulting from the construction and operation of an MRS facility. These payments are to be allocated in a fair and equitable manner, and are to be utilized by units of general local government only for

Answer 13 (cont'd)

planning, construction maintenance and provision of public services related to siting of such facilities. Similar authority for aid to State governments for MRS impacts is not in the NWPA.

The amount of reimbursements to the State and/or local government for reasonable and direct expenses incurred in association with the MRS facility would be determined through the consultation-and-cooperation process. Cost estimates have not been developed for these payments. Depending on the particular expense, existing authority may be sufficient.

The remaining three types of financial assistance will require specific new legislative authority. Pre-operational payments in the range of $15 million per year based on a tax-equivalancy concept have been suggested, and would be made to the State and local governments. Post-operational payments would be determined through a valuation method during the consultation-and-cooperation process, and would be made to the State and local governments to provide an assured source of revenue

Answer 13 (cont'd)

amount. The actual basis for determining payments equivalent to taxes might be different.

Other appropriately negotiated payments would be determined through the consultation-and-cooperation process, and would be made to fund required needs and activities not covered by any of the preceding types of financial assistance.

each year equal to the amounts they would receive from taxing the MRS facility like other real property and industrial activity within their jurisdictions, as under section 116(c)(3) of the NWPA.

Although the Department has not developed a cost estimate for these payments, the socioeconomic working group of the Clinch River Task Force has estimated the potential property taxes that would be received by the city of Oak Ridge if the MRS facility were taxable. Using a market value of $500 million (lowest case) and $1 billion for the facility (highest case), the Task Force computed an assessed value of between $175 million and $297.5 million. This range of values could lower the property tax rate, since the facility would significantly increase the city's total assessed value. Based on lowered tax rates of $2.56 per hundred dollars of assessed value and $1.92 per hundred dollars of assessed value, respectively, the Task Force estimated potential city property tax revenues due to taxation of the MRS facility at $4.5 million (lowest case) to $5.7 million (highest case). Roane County would receive a similar

QUESTIONS FROM SENATORS BREAUX AND SIMPSON

Question 14:	**Please summarize** your understanding of NRC's regulatory role, following approval of DOE's license application, in the construction, operation, and decommissioning of an MRS facility. Will the storage casks be approved by the NRC? Is the decommissioning of this facility subject to NRC regulation?
Answer:	Following NRC's approval of a DOE license application for the MRS facility, the NRC would maintain the same regulatory role as it does for an Independent Spent Fuel Storage Installation constructed, operated and decommissioned by private industry. The DOE expects to be treated in the same manner as any private applicant for an NRC license. Storage casks will be approved by NRC for use at the MRS facility. Decommissioning of the MRC facility is subject to NRC regulation.

QUESTIONS FROM SENATORS BREAUX AND SIMPSON

Question 15: Please identify all aspects of the MRS proposal, including all decisions that DOE has made or proposes to make regarding facility design, costruction, operation or decommissioning that will have an impact on repository design, location, construction, operation or closure. Which of these decisions, once made, are irreversible (e.g., storage of spent fuel at the MRS in canisters which form an integral part of the final waste package at the repository).

Answer: The major impact of the MRS facility on the first repository will be the simplification of repository surface facilities, in that most of the packaging steps that were originally intended for the first repository will now be assigned to the MRS. This transfer of packaging functions to the MRS will impact the repository surface facility design, construction, operation and decommissioning, in the sense that the surface facilities at the repository will be reduced in scope. It should be noted that this transfer of packaging functions to the MRS will have no impact on the selection decision for the first repository location. Regarding the impact of the MRS on repository packages, the canister produced by the MRS is planned to be repository-specific for whatever geologic media is eventually chosen and it should not have any impact on the long term disposal issue.

Answer 15 (cont'd)

The MRS is intended to be flexible in the operations that it will perform for the system. In this regard, it is intended that the MRS will be able to accommodate changes in canister design if the waste package designs within the repository efforts change.

Rather than foreclosing options, the entire integral MRS concept is envisioned as providing increased flexibility to deal with uncertainties and changes.

QUESTIONS FROM SENATORS BREAUX AND SIMPSON

Question 16: If the Congress authorizes DOE to construct an MRS facility in accordance with the proposal submitted by DOE, with no further modification, please identify all issues addressed in the Nuclear Regulatory Commission's existing licensing requirements for such a facility (10 CFR 72) that, in your view, should be construed to be resolved and not subject to further regulatory review.

Answer: Since the Department has not completed a final definitive design for the MRS facility and has not prepared a license application to the NRC for the construction and operation of the MRS, the Department does not consider any issue regarding the MRS under 10 CFR Part 72 to be resolved and not subject to further regulatory review.

QUESTIONS FROM SENATORS BREAUX AND SIMPSON

Question 17:	Section 141(c)(2) of the NWPA requires DOE to comply with the requirements of NEPA, if Congress authorizes construction of an MRS facility. If Congress authorizes DOE to construct an MRS facility in accordance with the proposal submitted to Congress, with no further modification, please identify the steps that DOE would take to satisfy section 141(c)(2). Would DOE prepare an environmental impact statement? Describe how DOE would address the issues of alternative sites, the NEPA comment process, and cost/benefit analysis.
Answer:	Section 141(c)(2) of the NWPA states that "the requirements of the National Environmental Policy Act shall apply with respect to the construction of... [an authorized MRS,] except that any environmental impact statement prepared with respect to such facility shall not be required to consider the need for such facility or any alternative to the design criteria for such facility set forth in subsection (b)(1)." This section is noteworthy, since it does not indicate which government agency, DOE or NRC, is to prepare the environmental impact statement (EIS). In addition, NRC regulations require an applicant to prepare an environmental report to submit with the license application and further require NRC to prepare an EIS.

Answer 17 (cont'd)

This situation leaves open to DOE and NRC a number of options under the Council on Environmental Quality (CEQ) regulations e.g., a joint EIS with either NRC or DOE as lead agency, a DOE prepared EIS which could be adopted by NRC, or a DOE environmental report to be used as the basis for an EIS by NRC. These options have been and are being informally explored by both agencies. However, it is quite clear that an EIS will be prepared to cover construction of an authorized MRS.

The issues of alternative sites, the NEPA comment process and cost benefit analysis are addressed in the next question.

QUESTIONS FROM SENATORS BREAUX AND SIMPSON

Question 18: Section 141(d) of the NWPA relieves the NRC of the responsibility for considering the need for an MRS, but is silent on the issues of alternative sites, the NEPA comment process, and cost benefit analysis. To what extent, in the Department's view, should Congressional approval of the MRS proposal submitted by DOE be construed to resolve these issues, if the Department's proposal is approved by Congress without modification?

Answer: The Department believes Congressional authorization of an MRS at a particular site should foreclose the need to consider alternative sites but would not foreclose the need to consider reasonable alternatives under section 102(C)(iii) of the National Environmental Policy Act (NEPA) or section 1502.14 of the regulations of the Council on Environmental Quality.

The applicability of the NEPA comment process is not, in the Department's view, in question. The requirements of NEPA, with the exception of consideration of need, apply to the construction of an MRS facility. The CEQ regulations define the NEPA comment process which must be followed in preparation of an environmental impact statement.

If the Department's proposal is approved by Congress without modification, it is the Department's view that the issue of preparation of

Answer 18 (cont'd)

a cost/benefit analysis would be resolved. A cost/benefit analysis is part of the assessment of need in an EIS. The NWPA excludes the requirement to consider the need in an EIS prepared for construction of an MRS facility. However, there are requirements in NRC regulations for cost benefit analyses. Without guidance from Congress, the issue is likely to be raised again should the NRC disagree with the DOE interpretation of the subsection 141(c)(2) exclusion. The NRC has indicated concern for this issue in their document Staff Evaluation of U.S. Department of Energy Proposal for Monitored Retrievable Storage (NUREG1168).

QUESTIONS FROM SENATORS BREAUX AND SIMPSON

Question 19: Under DOE's proposal, is the transportation of spent nuclear fuel or high-level radioactive waste from a utility site to an MRS facility subject to regulation by DOT and NRC? If not, is it DOE's intention to nevertheless comply with DOT and NRC regulatory requirements that pertain to the transportation of nuclear materials by the commercial sector, including physical protection and prenotification requirements, for such shipments? To the extent that DOE is now exempt from such requirements, would DOE support legislation to clarify and extend the application of these requirements to transportation of waste to the MRS facility?

Answer: Under current rules of the Department of Transportation (DOT), DOE shipments of spent fuel from utility sites to an MRS facility would be subject to DOT regulation. DOT regulations currently include requirements for highway routing, driver training, cargo handling, labeling and marking packages, and placarding.

While regulations of the DOT also specify that the DOE may certify its own transport packaging using standards that are equivalent to those of the NRC (49 CFR 173.7(d)), and require the DOE to protect shipments from act of theft and sabotage using procedures that are equivalent to those of the NRC (49 CFR 173.22(c)), the DOE has indicated its intent to follow NRC transport procedures in existence

Answer 19 (cont'd)

at the time that spent fuel is shipped from utility sites to an MRS facility.

Existing NRC transport requirements--specifically applicable to NRC-licensees--extend to cask design, shipment prenotification and physical protection. DOE believes that meeting the transport requirements of NRC when shipping spent fuel from utility sites to an MRS facility (and any other NWPA facility) is consistent with the intent of the Congress when enacting the NWPA. In interpreting the intent of the Congress, DOE has been guided by section 137(a) of the NWPA, which requires the transportation of spent nuclear fuel for interim storage to be subject to licensing and regulation by NRC and DOT as provided for the transportation of commercial spent nuclear fuel under existing law.

It should also be noted that DOE has committed to meet DOT and NRC requirements when transporting high-level radioactive waste to NWPA facilities; under current planning, however, such waste will be shipped directly to a repository and not to an MRS facility.

Answer 19 (cont'd)

Since the NWPA provides strong policy guidance for compliance with NRC and DOT regulations in conducting NWPA transportation (and, in any event, existing DOT regulations would extend to spent fuel transportation to NWPA facilities), DOE does not believe that additional legislation is required to extend the application of DOT and NRC requirements to spent fuel transportatin to an MRS facility.

QUESTIONS FROM SENATORS BREAUX AND SIMPSON

Question 20: Has the Department made a decision whether to consolidate all spent nuclear fuel assembly needs prior to emplacement in the geologic repository? If such a decision has been made, explain the technical justification and the impact this will have on repository cost. If spent nuclear fuel assembly rods are not consolidated, what impact would this have on the justification for an MRS? Please describe the Department's program for testing and demonstrating equipment for fuel disassembly and consolidation, including the schedule for such program.

Answer: In both the approved system (repository only) and the proposed integrated system (with MRS), the current baseline Design Requirements Documents assume that at least 90% of all spent fuel assemblies will be consolidated prior to emplacement. However, this does not constitute a final decision.

In general, the required repository area and volume are determined by the initial decay heat load of material to be emplaced. These values are not sensitive to the number of waste packages emplaced. Therefore, the major costs of mining and backfilling are not sensitive to whether or not the spent fuel is consolidated. However, the total cost of waste packages, the cost of handling waste packages, and the cost of drilling waste package

Answer 20 (cont'd)

emplacement boreholes are directly dependent on whether or not the spent fuel assemblies are consolidated. In addition, package performance could be an important consideration in any final decisions on consolidation.

The Department's justification for an MRS is not dependent on the rod consolidation decision. If a decision is made not to consolidate, a significant packaging effort is still required to seal multiple square assemblies into a suitable disposal container.

The Department's program for testing and demonstrating equipment for fuel disassembly and consolidation includes two projects which are in progress. The first of these projects is a dry rod consolidation technology project. The purpose of this project is to obtain data on rod pulling forces, guide tube cutting, and behavior and rod handling by consolidating 48 spent fuel assemblies in a small hot cell. These consolidated fuel canisters will then be used in a test of

Answer 20 (cont'd)

consolidated spent fuel storage in a metal cask. Rod consolidation activities in this project are scheduled to start this summer.

The second project involves the phased competitive development and demonstration of prototype rod consolidation equipment for use in an MRS or repository. Phase 1 consisted of the selection of 5 private sector contractors to conduct a preliminary design of the rod consolidation process and equipment. In Phase II, three of these contractors were selected in April 1987 to complete final designs of equipment for Phase III which is fabrication and cold checkout of the equipment. Phase IV will be a hot demonstration of up to 200 spent fuel assemblies.

It is anticipated that up to 2 of the Phase II contractors will be selected for Phase III and that only one contractor's equipment will be used in the Phase IV hot demonstration, which is scheduled for completion in late 1989. The estimated cost of these activities including the hot demonstration

Answer 20 (cont'd)

and development and demonstration of volume reduction and canister closure equipment will be in the range of 60-70 million dollars.

QUESTIONS FROM SENATORS BREAUX AND SIMPSON

Question 21: Aside from the objective of providing storage capacity for those utilities that might be running out of on-site storage capacity, how do the technical functions to be performed at an MRS (consolidation of spent fuel and emplacement in canisters) differ from the functions that will be performed at the repository site for spent fuel coming from the western reactors.

Answer: Presently, the MRS facility is planned to receive and consolidate spent fuel into repository specific canisters and to store these canisters, as necessary, in the MRS storage field. The MRS would manage the shipment, receipt and inspection of about 90% of the spent fuel intended for the first repository, which comes primarily from eastern operating reactors. Regarding the first repository, with an MRS in the waste management system, the Department presently intends that the remaining 10% of the spent fuel, mainly from western reactors, be transported directly to the first repository and packaged without consolidation into a final disposal container. Therefore, the technical functions at the repository would not include the spent fuel consolidation and its associated activities. Further, the MRS would be receiving and preparing more than 59,000 MTU of spent fuel compared to the 5,600 MTU of fuel from the

Answer 21 (cont'd)

western reactors prepared at the first repository. Thus the repository would be relieved of major shipment planning and management efforts as well as packaging efforts. Another notable difference is that many issues related to those technical functions to be performed at both facilities could be resolved in the earlier and separate licensing review of the MRS allowing the repository to more appropriately focus on waste isolation issues.

QUESTIONS FROM SENATORS BREAUX AND SIMPSON

Question 22:	Please provide a transportation map of the probable routes for spent nuclear fuel shipments (both by truck and rail), if Congress authorizes an MRS as proposed by DOE. Include a summary of the number of annual shipments, both by truck and by rail.
Answer:	A set of maps of possible highway and rail routes for the shipment of spent nuclear fuel under the Nuclear Waste Policy Act is attached. It must be noted that actual shipment will not begin for at least 10 years during which time State interaction on routes could significantly change those shown. In addition the number of shipments could be significantly reduced if anticipated new casks, with higher capacities, are developed. Thus, both the routes and number of project annual shipments could change significantly over the next 10 years. Authorization of an MRS at the recommended site would provide early planning for the routes. The maps account for two configurations of the waste management system -- that which includes an MRS facility (MRS Case) and that which does not (No - MRS Case) -- and three possible repository sites -- the three candidate repository sites that have been selected for site characterization: the Yucca

Answer 22 cont'd

Mountain site in Nevada, the Deaf Smith County site in Texas, and the Hanford site in Washington. For the MRS Case maps, the site of the MRS is assumed to be that recommended by the Department in its proposal -- a site on the Clinch River in the Roane County portion of Oak Ridge, Tennessee.

For those reactors which currently have the capability to handle and load a 100 ton rail cask and have access to a rail line, the maps depict possible rail routes that may be used for the shipment of spent nuclear fuel. For all other reactors, the maps depict possible highway routes that may be used for such shipments.

The movement of 3,000 MTU (metric tons of uranium) of spent fuel per year from reactors to a repository is currently estimated to require approximately 350 rail shipments and 1,000 truck shipments annually. The addition of an MRS facility to the system would add up to 35 rail shipments annually to these figures to account for shipments from the MRS facility to a repository.

Answer 22 (cont'd

It would, however, reduce the average distance of each shipment from about 1900 miles to about 800 miles. The major assumptions underlying these shipment figures are:

1) From-reactor shipments consist of one cask per shipment.

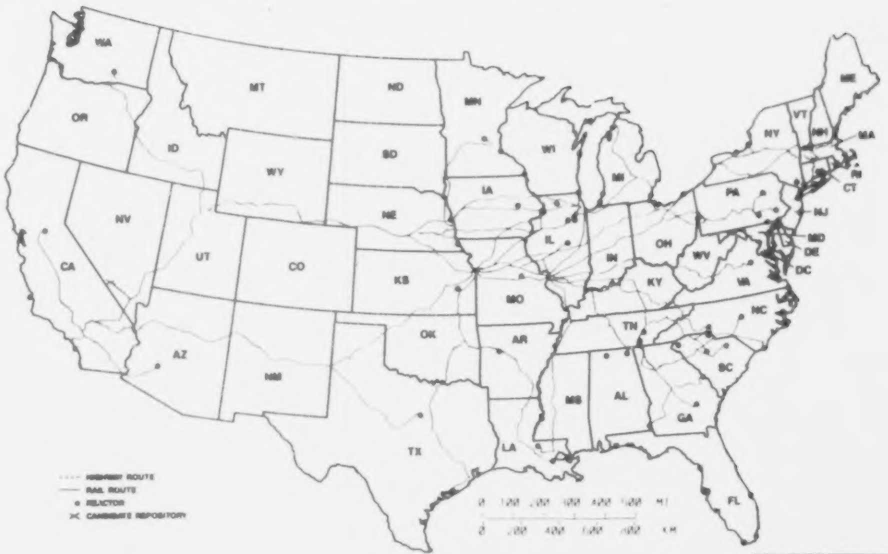
2) MRS-to-repository shipments consist of five spent fuel casks per shipment.

3) The assumed shipping cask capacities are as follows (could increase significantly after the current cask development program is completed, thus reducing the total number of shipments).

Cask type	Mode	Cask capacity (No. of fuel assemblies)	
		PWR*	BWR**
From-reactor	Truck	2	5
From-reactor	Rail	14	36
MRS-to-repository	Rail	48	98

*PWR - Pressurized Water Reactor
**BWR - Boiling Water Reactor

POSSIBLE ROUTES FOR SPENT NUCLEAR FUEL SHIPMENT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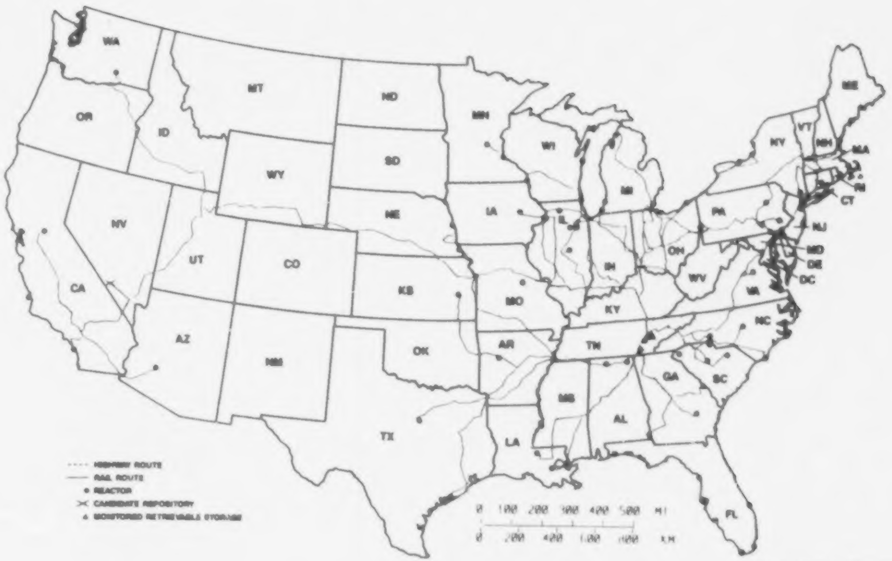
The information contained on this map is tentative and is based on a specific set of assumptions documented in map/table package number BPMD/OTSP/TRAN-1/APRIL 1987. Any interpretation of this information outside the context of these assumptions is not appropriate.

Map Number	B.1
Candidate Repository	YUCCA MOUNTAIN, NV
Region	NATIONAL
System	NO-MRS CASE
BPMD/OTSP/TRAN-1/APRIL 1987	
Notes:	

POSSIBLE ROUTES FOR SPENT NUCLEAR FUEL SHIPMENT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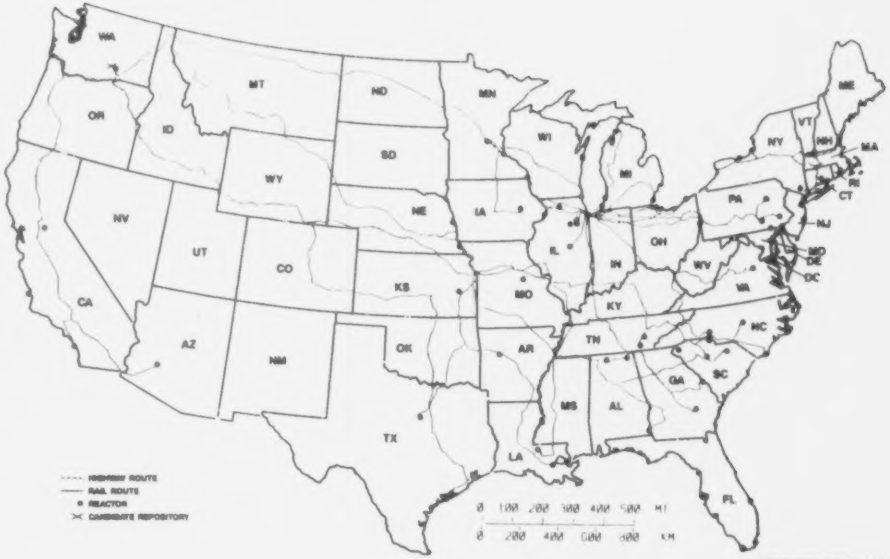
The information contained on this map is tentative and is based on a specific set of assumptions documented in map/table package number [illegible] 1987. Any interpretation of this information outside the context of these assumptions is not appropriate.

Map Number	6.2
Candidate Repository	YUCCA MOUNTAIN, NV
Region	NATIONAL
System	MRS CASE
[illegible] APRIL 1987	
Notes:	

POSSIBLE ROUTES FOR SPENT NUCLEAR FUEL SHIPMENT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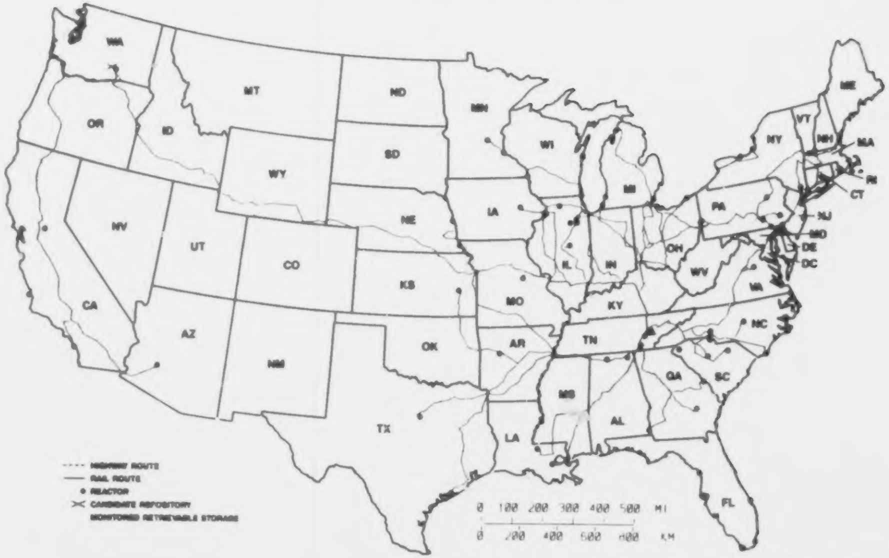
The information contained on this map is tentative and is based on a specific set of assumptions documented in mapfable package number [illegible] 1987. Any interpretation of this information outside the context of these assumptions is not appropriate.

Map Number	B.3
Candidate Repository	HANFORD, WA
Region	NATIONAL
System	NO-MRS CASE
[illegible] 1987	
Notes:	

POSSIBLE ROUTES FOR SPENT NUCLEAR FUEL SHIPMENT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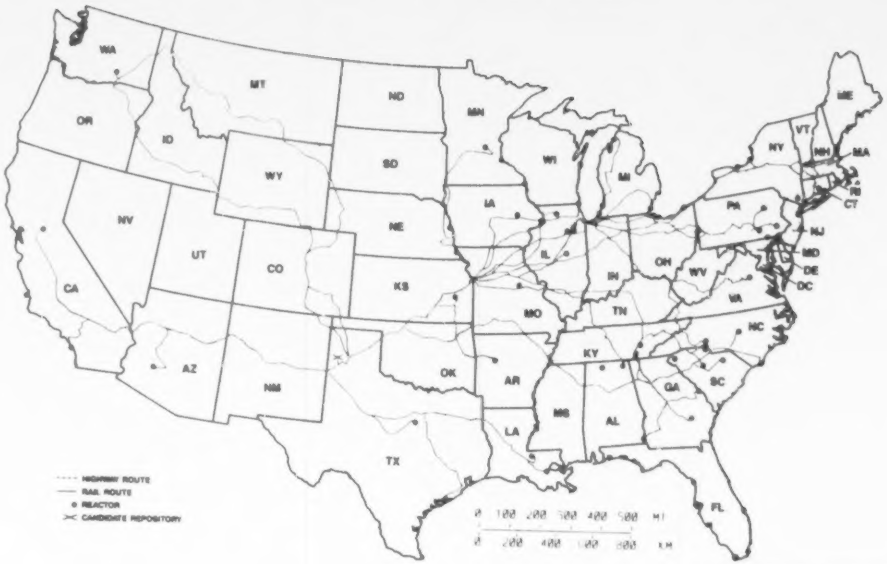
Map Number	B.4
Candidate Repository	HANFORD, WA
Region	NATIONAL
System	MRS CASE
SPIED/OTSP/TRAN-1/APRIL 1987	
Notes:	

The information contained on this map is tentative and is based on a specific set of assumptions documented in map/table package number SPIED/OTSP/TRAN-1/APRIL 1987. Any interpretation of this information outside the context of these assumptions is not appropriate.

POSSIBLE ROUTES FOR SPENT NUCLEAR FUEL SHIPMENT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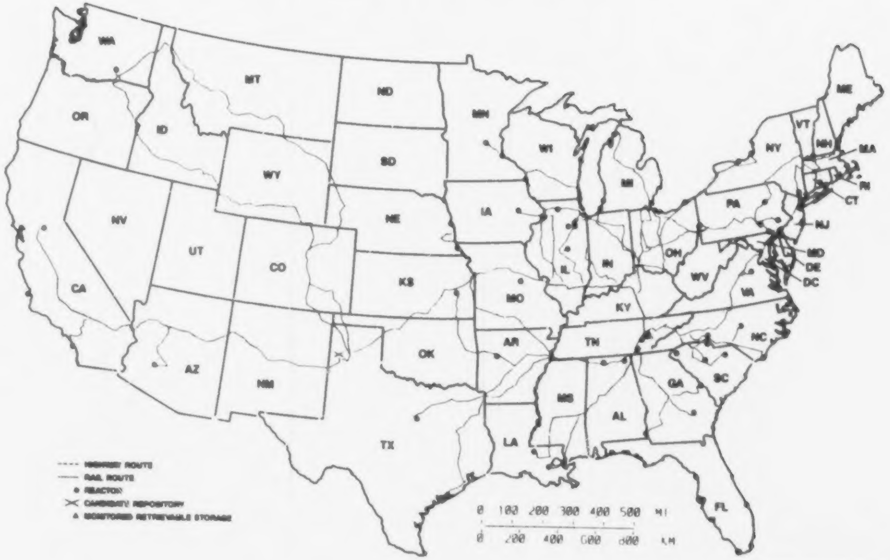
Map Number	N.3
Candidate Repository	DEAF SMITH, TX
Region	NATIONAL
System	NO-MRS CASE
SPRD/OTSP/TRAN-1A/PRL, 1987	
Notes:	

The information contained on this map is tentative and is based on a specific set of assumptions documented in map/table package number SPRD/OTSP/TRAN-1A/PRL, 1987. Any interpretation of this information outside the context of these assumptions is not appropriate.

POSSIBLE ROUTES FOR SPENT NUCLEAR FUEL SHIPMENT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The information contained on this map is tentative and is based on a specific set of assumptions documented in magtable package number SPSED/OTSP/TRAN-MAPRL, 1987. Any interpretation of this information outside the context of these assumptions is not appropriate.

Map Number	9.5
Candidate Repository Region System	DEAF SMITH, TX NATIONAL MRS CASE
SPSED/OTSP/TRAN-MAPRL, 1987	
Notes:	

QUESTIONS FROM SENATORS BREAUX AND SIMPSON

Site Characterization

Question 23:	Please provide an explanation of the purpose of site characterization. Is site characterization necessary to determine whether a site is technically suitable? Is site characterization necessary to determine whether a site is qualified for application for a construction authorization? Is site characterization necessary to give the Department a high degree of confidence that a given site will satisfy the NRC's technical licensing requirements? Can the Department make such a judgment without characterizing a site?
Answer:	The purpose of site characterization is to collect the extensive geologic data that are necessary to demonstrate the suitability of a site for development as a repository, to design the repository and the waste package, to prepare an environmental impact statement, and to obtain a construction authorization from the Nuclear Regulatory Commission. A program of site characterization* is required by the Nuclear Waste Policy Act of 1982, by the regulations promulgated for repositories by the Nuclear Regulatory Commission in 10 CFR Part 60, and by the implementation guidelines that are included in the DOE Siting Guidelines (10 CFR Part 960). Although the Secretary of Energy has made a preliminary determination that the candidate sites for the first repository are suitable for development as repositories, as required by 10 CFR Part 960, the final evaluation of site suitability required by Part 960 cannot be made until site characterization has been completed. Since the technical requirements of 10 CFR Part 60 are

embodied in Part 960, the evaluation of site suitability for purposes of compliance with Part 960 also involves evaluation of compliance with NRC's requirements in Part 60. The Department believes that a high degree of confidence is needed to make judgments about whether a site is suitable, whether a site is qualified for application for a construction authorization, and whether a given site will satisfy the NRC's technical licensing requirements. Site characterization is necessary to obtain the information needed to obtain a high degree of confidence in these judgments. Therefore, the answer to the first three questions is yes, and the answer to the last question is no.

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*The Nuclear Waste Policy Act of 1982 defines site characterization as "...activities, whether in the laboratory or in the field, undertaken to establish the geologic condition and the ranges of parameters of a candidate site relevant to the location of a repository, including borings, surface excavations, excavations of exploratory shafts, limited subsurface excavations and borings, and in situ testing needed to evaluate the suitability of a candidate site for the location of a repository, but not including preliminary borings and geophysical testing needed to assess whether site characterization should be undertaken..."

QUESTIONS FROM SENATORS BREAUX AND SIMPSON

Site Characterization

Question 24: Is the characterization of multiple sites necessary, in your view, to ensure that the best site among those being considered is selected?

Answer: Yes. Although the Department believes that each of the candidate sites will be found suitable for hosting a geologic repository, the site characterization program will yield the information needed to select the best site from among those being considered.

QUESTIONS FROM SENATORS BREAUX AND SIMPSON

Site Characterization

Question 25: Is the characterization of multiple sites necessary, in your view, to ensure that the program is not unduly delayed in the event that one of the sites proves to be unacceptable?

Answer: Yes. The current plan to characterize three candidate sites will provide increased assurance that the program will not be unduly delayed if one of the sites proves to be unacceptable.

QUESTIONS FROM SENATORS BREAUX AND SIMPSON

Site Characterization

Question 26: Would you support a program that called for the characterization of only one site? Please explain.

Answer: With the possibility that the recommended site may ultimately be vetoed by the State or Indian Tribe, and the inherent lack of certainty in the technical suitability of sites not yet characterized, the current plan to characterize three sites provides a higher probability for earlier identification of a suitable site for a repository. If a suitable site could be identified where the State, affected Indian Tribe, and local government supported the site characterization phase, it would be advantageous to consider the tradeoffs involved in characterizing only one site, or sequential or phased characterization.

QUESTIONS FROM SENATORS BREAUX AND SIMPSON

QUESTION 27: Is legislation required in order to permit the Department to proceed with implementation of the nuclear waste program in accordance with the approach proposed in the Draft Mission Plan Amendment? If so, please submit draft legislation, together with a section-by-section summary, setting forth the changes that DOE is proposing which require legislative action. In addition, please indicate where this legislation would modify the existing requirements of the NWPA.

ANSWER: The Department has indicated previously that we recognize that, in carrying out the first and second repository programs as described in the draft amendment to the Mission Plan, some form of new legislation will be required.

The Department will be happy to submit legislation after reviewing the comments received on the draft Mission Plan Amendment. Upon consideration of those comments, the Department will consider further steps necessary to implement the initiatives contained in the amendment to the Mission Plan.

QUESTIONS FROM SENATORS BREAUX AND SIMPSON

Site Characterization:

Question 28: Please describe the nature and scope of the work currently being undertaken by DOE with regard to identification of sites for a second repository. Specifically, identify the Department's program, including funding levels, for meeting the statutory requirement of the NWPA that, "not later than July 1, 1989, the Secretary shall nominate 5 sites... and recommend by such date to the President from such 5 nominated sites 3 candidate sites the Secretary determines suitable for site characterization for selection of the second repository." How does this program differ from the program that was in place prior to May 28, 1986? What changes were made in that program as a result of the decision announced May 28, 1986?

Answer: As announced by the Secretary of Energy on May 28, 1986, the DOE has decided that it would be prudent to postpone site-specific work for the second repository. However, the DOE remains firmly committed to a two-repository system and, to this end, intends to continue with a technical program of non-site-specific studies for the second repository.

The non-site-specific studies will be directed at determining (1) whether a particular type of host rock, regardless of its geographic location, meets various geologic, hydrologic, geochemical, and rock-mechanics criteria; (2) how the host rock would respond to the heat and radiation emitted by the waste; and (3) how well the engineered components of the repository would perform under

Answer 28 (cont'd)

the conditions provided by the host rock. Such studies can be based on the scientific literature, information collected by private companies, and data collected in studies performed for the same type of rock in other countries. This non-site-specific work on the second repository is anticipated to cost about $24 million per year.

Prior to May 28, 1986, the DOE was pursuing site-specific studies to identify potentially acceptable sites for a second repository. These site-specific studies are usually based on data collected at the specified potential repository site and in its vicinity. The studies could include, for example, drilling boreholes, seismic surveys, and detailed mapping studies. Site-specific studies are significantly more expensive, and would cost more than $100 million per year.

The principal change resulting from the May 28, 1986, decision was initiation of a Repository Technology Program that will focus on non-site-specific evaluation of potential host rocks. This approach will identify the characteristics or attributes that a particular geologic setting must

Answer 28 (cont'd)

have in order to satisfy various regulatory requirements for waste isolation. Then analytical computer models will be developed and tested using existing geological data to begin to enhance the DOE's capability to successfully predict how a particular geologic setting will perform as a host rock for a repository. Because this approach will integrate various geoscience investigations with the necessary understandings of the engineered systems and the regulatory requirements--and because it will be based upon experience gained from performance assessments for the first repository--a high level of confidence will be yielded from its results.

QUESTIONS FROM SENATORS BREAUX AND SIMPSON

Question 29: On May 29, 1986, DOE announced that it was indefinitely postponing site-specific work related to a second repository and that specific sites were no longer under active consideration. On September 5, 1986, DOE's General Counsel, advised that "while an amendment to the mission plan is an entirely appropriate means under the statute to present information concerning the need and timing of a second repository to the Congress, such an amendment, standing alone, would not have the legal effect of altering the provisions of section 112 and 114 that require particular recommendations by particular times regarding a second repository." DOE has subsequently indicated that implementation of the nuclear waste program, in the manner proposed in the Draft Mission Plan Amendment, will require "some form of new legislation." In subsequent statements, DOE has apparently said that the Department will be required to resume site-specific work on the second repository unless legislation in some form is forthcoming from Congress. In view of these statements, please explain why DOE is not now in violation of the NWPA with regard to the provisions governing a second repository? If, in your view, you are not in violation of the NWPA, and if no sites are now under active consideration for a second repository, please explain why Congress needs to enact legislation to approve the course of action that you have proposed in the Draft Mission Plan Amendment?

Answer: The General Counsel's memorandum of September 5, 1986 concluded that new legislation having the legal effect of "altering the provisions of sections 112 and 114 that require particular recommendations by particular times" would be necessary to implement the schedule proposed in the draft Mission Plan amendments for the second repository program. DOE is not now "in violation" of the Nuclear Waste Policy Act with regard to the second repository program because the times by which those recommendations are required under current law have yet to occur. New legislation is needed because the anticipated period of postponement of site-specific work in the second repository program would not enable the Department to make the recommendations that current law requires to be made in 1989 and by 1991.

QUESTIONS FROM SENATORS BREAUX AND SIMPSON

QUESTION 30: Is the Department's proposed approach, as set forth in the Draft Mission Plan Amendment, consistent with the position that the Department took in NRC's Waste confidence proceedings? Is it consistent with the decision rendered by the NRC?

ANSWER: The Department believes that the approach as set forth in the draft Amendment to the Mission Plan is consistent with both the position that the Department took with regard to the NRC's waste confidence proceedings and with the decisions rendered by the NRC.

QUESTIONS FROM SENATORS BREAUX AND SIMPSON

QUESTION 31:	Does the Department have the authority under the existing NWPA to provide financial assistance in the form of "incentives" to States or affected Indian Tribes? Does this authority extend to the type of arrangement contemplated under S.839?
ANSWER:	The Department does not have authority under the Nuclear Waste Policy Act of 1982 to provide financial assistance in the form of "incentives" to States or affected Indian Tribes. The Act provides authority to the Department to extend financial assistance in the form of grants to States and affected Indian Tribes to enable them to fully participate in the Civilian Radioactive Waste Management Program and to mitigate either socioeconomic or environmental impacts. In addition, the Department is required by the Act to make payments to ". . . each State and unit of general local government in which a site for a repository is approved . . ." that would be equal to the taxes they would have received were they authorized to tax the Department's activities. The Department does not believe that it presently has the authority under the Act to enter into the funding arrangements under the incentive agreements contemplated under S.839.

QUESTIONS FROM SENATORS BREAUX AND SIMPSON

QUESTION 32: Please provide the Department's views on the conclusions and recommendations contained in the report entitled "Managing Nuclear Waste -- A Better Idea."

ANSWER: Attached is a letter dated April 18, 1985, from the Secretary of the Department of Energy to the President that formally transmitted the report by the Advisory Panel on Alternative Means of Financing and Managing (AMFM) Radioactive Waste Facilities entitled "Managing Nuclear Waste - A Better Idea." The report responded to the Statutory requirement of section 303 of the Nuclear Waste Policy Act of 1982.

As enclosures to the transmittal letter were a report to the Secretary of the Department of Energy regarding the conclusions and recommendations found in the AMFM report and comments from the Nuclear Regulatory Commission on the same subject.

The Department's views regarding the conclusions and recommendations contained in the AMFM report may be found in the aforementioned enclosure to the transmittal letter.

QUESTIONS FROM SENATORS BREAUX AND SIMPSON

Spent Nuclear Fuel/High-Level Radioaction Waste Projections

Question 33: Please provide your most current estimates on the amount of spent nuclear fuel and high-level radioactive waste in existence today as well as annual projections (with annual and aggreate amounts identified) through the year 2030.

Answer: The spent nuclear fuel/high-level radioactive waste projection are shown in the attached Tables 1-3. The Energy Information Administration, which prepares the waste projections for the Department, does not currently prepare projections beyond the year 2020.

REPORT TO THE SECRETARY OF ENERGY ON THE CONCLUSIONS AND RECOMMENDATIONS OF THE ADVISORY PANEL ON ALTERNATIVE MEANS OF FINANCING AND MANAGING (AMFM) RADIOACTIVE WASTE MANAGEMENT FACILITIES

by the Review Group

Chairman: Danny J. Boggs
Deputy Secretary

Theodore J. Garrish
General Counsel

Martha Hesse Dolan
Assistant Secretary
Management and Administration

Benard C. Rusche
Director, Office of Civilian Radioactive Waste Management

The AMFM Panel has submitted its report "Managing Nuclear Waste - A Better Idea" to the Secretary. The report contains six general conclusions and one general recommendation in Chapter XII. In addition, Chapter X contains 14 specific enhancements ("Key Components of Any Waste Management Structure") that are recommended for implementation by the Office of Civilian Radioactive Waste Management (OCRWM) or any alternative organization.

This paper lists and discusses the 6 general conclusions, the one general recommendation, and each of the 14 "key components".

A. AMFM Panel's General Conclusions and Recommendation

1. Panel's Conclusion:

There are serious defects in OCRWM as a management structure. Recognizing the history of predecessor organizations Atomic Energy Commission (AEC) and the Energy Research and Development Administration (ERDA) and continuing discussion of the liquidation of the Department of Energy (DOE), there is a serious and inherent lack of stability and continuity. This is a major cause of the absence of credibility, which inhibits DOE's effectiveness in carrying out the waste management program.

Discussion:

The Department believes that the past lack of stability and continuity was largely a result of the controversial nature of the program and the associated lack of a clear mandate from the Congress prior to enactment of the Nuclear Waste Policy Act (NWPA). The credibility of both the program and its management has improved substantially since enactment of the NWPA. Another change in organization would undoubtedly detract from, rather than enhance, this credibility.

Recommended DOE Position:

The activation of OCRWM and appointment of a permanent Director have improved the credibility of the waste management program. Retaining the present management structure, at least through the siting and licensing phases, will ensure the maintenance of adequate stability and continuity. Another change in organizational structure would weaken the stability and credibility.

2. Panel's Conclusion:

Waste management, as a business, has a number of distinct phases with which any organization would find it difficult to cope. The most troublesome phase of the overall waste program is the selection and approval of a repository site. Regardless of organizational form, the site selection process would be enhanced by use of a siting advisory council.

Discussion:

The Department is in complete agreement that the program would be difficult for any organization and that the siting phase is the most troublesome. However, the NWPA provides extensive, and adequate, provision for consultation and cooperation with affected constituencies, and employment of a siting advisory council now would seriously delay the critical siting process. The siting advisory council is discussed more fully later as one of the 14 "Key Components".

Recommended DOE Position:

The NWPA provides adequate mechanisms for consultation and coordination with affected parties and sufficient protection of constituent interests in the siting of a repository. A siting council would be counterproductive.

3. Panel's Conclusion:

There are several organizational forms, including private corporations, more suited than DOE for managing the construction and operation phases of the program. Once a site has been selected and licensed, the programmatic responsibilities would be quite different and could be transferred or contracted to a different organization.

Discussion:

DOE has no serious disagreement with the Panel's conclusion. However, in actual practice, the construction and operation of a repository would be carried out by a private firm, or firms, under contract with either DOE or a successor organization. Federal oversight would have to continue throughout the construction, operation, and the closure and decommissioning phases because of the program's potential impact on the environment and the public health.

Recommended DOE Position:

Construction and operation of a repository could be transferred to a different type organization but, because of the need for continuing Federal oversight, such transfer might not be of any particular benefit to the program. A decision should be postponed until after the site for the first repository has been approved.

4. Panel's Conclusion:

An immediate effort must be made to improve the credibility, internal flexibility and cost-effectiveness of OCRWM.

Discussion:

Credibility was discussed under conclusion 1 and is not further addressed here.

Internal flexibility and cost-effectiveness were two of the organizational tests used by the Panel in its study.

Members of the Panel believed the management of the program would be more efficient if the organization's personnel activities were not constrained by Civil Service regulations, conflict of interest rules and political clearance of appointed officials.

The Panel recognized that it is difficult to achieve cost-effectiveness because the classical motivation for efficiency -- the expectation of profit -- is lacking in this "business". Therefore, personnel flexibility would be the means for achieving cost-effectiveness.

A Federally-chartered corporation would be exempt from Civil Service regulation. The ability to pay larger salaries should enable the organization to attract better qualified personnel, but the profit incentive for efficiency would still be lacking. In addition, over 85 percent of the OCRWM budget is expended by contractors and, therefore, most of the personnel employed by the program are already in "exempt" firms. Nevertheless, it is true that OCRWM has experienced difficulty in acquiring the quality personnel needed to manage the program. Personnel flexibility is discussed as one of the 14 "key components".

Recommended DOE Position:

DOE agrees that cost-effectiveness is a major management objective. It has already employed a private accounting firm to ensure that the program meets high accounting standards in its business practices. The Department will also study the Panel's recommendation that a private contractor be hired specifically to ensure optimum economy and efficiency. In addition, either the personnel flexibility available to a corporation or exemption of OCRWM from appropriate Civil Service regulation could improve management capabilities.

5. Panel's Conclusion:

No modification to the DOE/OCRWM organization would provide adequate stability and continuity.

Discussion:

The Panel believes that this is a major problem for OCRWM, or any Federal entity, whose senior staff and their supervisors serve at the pleasure of the President. Beyond this, the Panel cites the history of the program under three different agencies and multiple program structures. It concedes that the record has shown marked improvement under DOE, particularly since the enactment of NWPA. "But four decades of organizational turmoil cannot be dissipated over night."

The Department believes that management of nuclear waste is clearly a Federal function because of the potential impacts of the program on the environment and the public health. This implies that the program must be subject to a considerable degree of political accountability. Changes in the Administration result in some management instability, but most staff-level positions are unaffected. The NWPA provides sufficient constraints to ensure the program is not subject to undue political influence.

Recommended DOE Position:

Political accountability to both the Administration and the Congress, i.e., the elected representatives of the American people, is essential and should be retained.

6. Panel's Conclusion:

The Panel's preferred alternative organization is a Federally chartered corporation (FEDCORP).

Discussion:

FEDCORP is envisioned as a public corporation chartered by Congress. It would be a single-mission, non-profit, organization with a board of directors appointed by the President and subject to confirmation by the Senate. Board members would have staggered terms to provide continuity. It would embody all the "Key Components" in Chapter X of the report. The Panel members were far from unanimous in this choice. The only actual vote taken was on September 26, 1984, when just 7 of the members, a bare majority, were in favor of this alternative.

It is not clear that a board of directors would be an effective decision-making body in dealing with the inherent dichotomy between a tight schedule of performance and the extensive need for public consultation, cooperation and participation.

Another major reservation concerning FEDCORP is the possibility that it would be less accountable, politically, to affected interests such as the states. This concern was expressed by state government representatives on the Panel who abstained from the vote for FEDCORP. A public corporation would also be less effective than a Federal agency in intergovernmental relations and would introduce special considerations in licensing and regulatory activities.

Recommended DOE Position:

Especially during the critical siting and licensing phase of the program, a Federal agency is clearly superior to another organizational form. The need for Government oversight continues throughout the construction, operation, and the closure decommissioning phases. Since, in actual practice, these phases would be performed by private contractors, under Federal oversight, the possible management advantages of transitioning to a new organizational form would be more than offset by the difficulty in amending the current legislation to effect such a change.

7. Panel's Recommendation:

Investigation should be undertaken immediately of the steps necessary to implement such a corporation.

Discussion:

The issue of whether FEDCORP is an appropriate organization for nuclear waste management has been addressed above. The major remaining question is whether steps should be taken to amend the NWPA.

Representatives of both state governments and the utility industry expressed strong dissent in presentations to the

Panel during September. Both groups stated their opposition to reopening the NWPA to any amendments at this time and expressed the opinion that the present organization was not a problem to them.

An investigation (or development of legislation) of steps to change the organizational structure would create uncertainty, especially now, during the critical siting phase of the program. This could result in delays in implementation, both because of the effect upon Federal staff and the constituencies affected by the program.

Recommended DOE Position:

There is no known constituency in favor of amending the NWPA at this time. In fact, representatives of the most affected groups would resist any attempts to change the legislation. Therefore, it would be unwise to initiate such an investigation at this time.

B. "Key Components For Any Waste Management Organization"

The 14 "key components" recommended by the Panel for implementation are discussed and evaluated as potential enhancements to OCRWM.

1. Milestone Reevaluation and Achievement.

Project milestones should be reconsidered and reevaluated in the context of what will actually be required to accomplish specific tasks taking cognizance of technical requirements, logistics and institutional relationships. This should include the formulation of a contingency planning process which will effectively deal with unforeseen problems and provide a means for adjusting to change while keeping the project on schedule. The project decision schedule called for in the Nuclear Waste Policy Act, which provides the mechanism for a balance between schedule and participation, should be formulated, agreed upon, and published. Once milestones have been reevaluated and set, they must be met on schedule.

Discussion:

The Department agrees with the Panel's recommendation. OCRWM has missed some important milestones established by the NWPA, and this has tended to diminish the credibility of the program. OCRWM, is reevaluating the schedules and preparing contingency plans in developing the Mission Plan. A draft Project Decision Schedule has been completed and submitted to affected agencies for review and comment.

Recommended DOE Position:

OCRWM is implementing this recommendation.

2. Waste Fund Oversight Commission.

A blue ribbon advisory commission drawn from those constituencies most concerned with avoiding an increase in the one mill per killowatt hour fee should be established to provide policy guidance to the executive(s) directly responsible for managing the radioactive waste disposal organization. This commission would be specifically charged with providing alternatives to fee increases. Members of this commission should be drawn from the nuclear utilities and ratepayer representatives, probably represented by state public utility commissions through the National Association of Public Utility Commissioners.

Discussion:

The Department agrees that avoiding an increase in the disposal fee is an important objective and is placing emphasis upon obtaining cost-effective performance of the program. OCRWM has continued to provide the utilities and Public Utility Commissioners with full information about all its activities, including financial statements and cost analyses, but has not established a formal advisory commission.

Advantages:

- o Utilities are experienced in nuclear power plant construction and regulation and could provide valuable advice on improving cost-effective performance of the program.
- o A formal advisory role in the program would respond to utility concerns and reduce their apprehension and criticism about the management of the program.
- o Changes in the fee, if necessary, would be more readily accepted.
- o The recommendation could be implemented by OCRWM without change in legislation.

Disadvantages:

- o Addition of an advisory group may upset the delicate checks and balances between the various constituencies now built into the NWPA.

- o An advisory group may give utilities an effective veto over programmatic decisions by forcing OCRWM to defend itself publicly for any rejection of the group's advice.
- o Utilities could become more critical if their advice were rejected.
- o Establishment of an advisory group could result in an over-emphasis on cost-effectiveness, as opposed to health, safety and environmental concerns.
- o A significant amount of OCRWM staff time would be required to support an advisory group.

Recommended DOE Position:

No action should be taken at this time, but further study may be warranted in the future.

3. Advisory Siting Council.

An Advisory Siting Council should be established to provide input to, and oversight for, the siting process to whatever entity is charged with the ultimate site selection responsibility. The Advisory Siting Council would provide input to the siting process and review and comment on the siting recommendation(s) made by the site selection authority. The Advisory Siting Council would be composed of stakeholders (e.g. states, tribes, environmental groups) most concerned with siting issues.

Discussion:

The NWPA contains substantial and specific requirements for consultation and cooperation with states and Indian tribes who are affected directly by siting decisions. The Department has gone beyond the letter-of-the-law to provide ample opportunity for constituent participation in the siting process. Several steps in the critical site selection phase have already been completed. Under NWPA, states receive grants to assist them in monitoring and participating in the site characterization and selection process. The establishment of a Siting Advisory Council at this time would result in a substantial delay in the selection and site characterization schedule.

Advantages:

- o A properly balanced advisory body could enhance the political climate for the acceptance of site selection decisions.

- o Public interest groups would be provided a formal role in the site selection process; this could lessen political tension.
- o Legislation is not required for implementation.

Disadvantages:

- o Establishing an advisory council may upset the delicate checks and balances between the various constituencies now built into the NWPA.
- o The Council role would conflict with the consultation and cooperation activities of affected states.
- o It would require several months for members to become fully knowledgeable and would cause confusion and potentially significant delays in the site characterization and selection process.
- o A significant amount of staff time would be required to support the council.

Recommended DOE Position:

An Advisory Siting Council would detract from, rather than enhance, the participation rights of the affected states and Indian tribes under the NWPA. It would delay the critical site characterization and selection process. It has limited and obscure advantages and substantive and real disadvantages and should therefore be rejected.

4. Scientific Peer Review Board.

A Scientific Peer Review Board should be established to provide oversight in the siting process to whatever entity is charged with the ultimate site selection responsibility. The Scientific Peer Review Board would be charged with the responsibility of reviewing and commenting on the siting recommendation(s) made by the site selection authority. This Board should be a technical advisory group, drawn from the scientific and engineering communities conversant with waste management. This Board would have staff and access to all program information and activities. The Board would also be available to address other technical issues on a required basis at the request of the radioactive waste management organization.

Discussion:

OCRWM now makes extensive use of scientific peer reviews and will continue to do so throughout the site characterization and selection process. However, a single Scientific Review Board could not encompass the diversity of expertise needed for the variety of research undertaken. Scientific peer review is clearly beneficial and, in fact, essential.

Proposed DOE Position:

The Department has implemented this recommendation, but has chosen to employ a number of different groups in preference to a single "board".

5. State and Tribal Technical Review Capability.

Under the Nuclear Waste Policy Act, states and Indian tribes are provided the opportunity to undertake independent review of repository siting actions occurring at locations within their boundaries. The radioactive waste management organization should enter into negotiations with potential host states and affected Indian tribes to work out binding agreements which set forth procedures that will enable states to carry out these review responsibilities. The AMFM Panel supports efforts to strengthen state and tribal technical capacity to monitor the repository program. The radioactive waste management organization should encourage state efforts in this area and in the use of consultation and cooperation agreements as provided in the Nuclear Waste Policy Act. This will reinforce the commitment of financial assistance to states and tribes and provide other procedural protections to assist states in independently reviewing and monitoring waste management activities. Increased technical capacity of the states and tribes will enhance program credibility and provide the confidence necessary for achieving national objectives.

Discussion:

As of December 31, 1984, the Department had provided $13,694,532 in grant assistance to states, Indian tribes and their associations.

Recommended DOE Position:

The Department has implemented this recommendation in full compliance with the NWPA.

6. Local Economic Development.

The Nuclear Waste Policy Act makes provision for financial assistance to mitigate potential impacts caused by the radioactive waste disposal function and associated facilities development. The radioactive waste disposal organization should develop and offer an array of specific incentives to communities that are potential hosts for a repository. This would give communities potentially affected a clear understanding of what socioeconomic assistance is required and possible. It may also be beneficial to offer incentives and resources to states and tribes beyond those required to mitigate specific impacts. Providing such economic benefit programs may encourage states, tribes and local communities to carefully reflect on how a repository might be integrated with an area and provide a net benefit to the community. This type of encouragement should not, however, have any impact upon the technical sufficiency of the radioactive waste disposal program.

Discussion:

The Department is currently providing assistance to the affected states and Indian tribes for the study of potential economic impacts. As the program progresses, appropriate assistance for the mitigation of adverse impacts will be provided in accordance with the NWPA. A program to offer explicit incentives to accept a repository, in addition to the mitigation of adverse impacts, would not appear appropriate.

Recommended DOE Position:

The Department has appropriately implemented this recommendation.

7. Public Education and Information.

There is a strong public interest in building a wide understanding of radioactive waste disposal and the management of this process in states which are candidates to host repositories and in states through which radioactive waste must travel. The radioactive waste management organization should undertake an effective education and public involvement program to present the facts associated with radioactive waste disposal and repositories. Such an education program must be structured so that is is perceived by the public as helpful and useful and is not interpreted to be a "sell" campaign. This program need not and should not be carried out solely by the radioactive waste management organization. Potential host states should be funded to assist in carrying out activities to increase citizen awareness and understanding of the national radioactive waste disposal program. The radioactive waste management organization's education efforts should be closely coordinated with those at the state level and should not infringe on state programs.

Discussion:

The Department supports this recommendation. OCRWM has an outreach program and is preparing plans to improve its educational activities. Assistance is available to the states for their educational programs.

Recommended DOE Position:

The Department has implemented this recommendation.

8. Oversight Contractor.

A firm experienced in providing oversight services for large technical contracts should be engaged to provide oversight to the radioactive waste disposal organization. This firm would serve as an internal consultant, using its access to all program activities to identify emerging problems and marshall the staff and other resources needed to resolve them. The primary focus would be on schedule and cost control, although general technical oversight would clearly be within its scope. The oversight contractor would provide the mechanism to facilitate policy level understanding of design tradeoffs, technical licensing issues and state/tribal/local concerns. It would enhance communication and coordination of field and site specific activities. To assure the avoidance of conflicts of interest, the firm selected for this oversight role, as a condition of being awarded this contract, must not have had any previous contracts with OCRWM or its predecessor organizations and would specifically be prohibited from obtaining any future contracts with the radioactive waste disposal organization.

Discussion:

This appears to be a recommendation to employ a contractor to advise OCRWM on all aspects of the management of the radioactive waste program. In part this would appear to duplicate the function of the proposed Waste Fund Oversight Commission as "the primary focus would be on schedule and cost control." It would also appear to duplicate some of the "consulting" services now provided by Roy F. Weston, Inc. It is not obvious that the addition of yet another contractor would further enhance program integration, or communication and coordination of field and site-specific activities.

Advantages

- o If contractor is compensated on a fixed fee plus incentives basis, and incentives are tied to demonstrable cost savings to the program, this may prove a cost-effective proposal.
- o An "oversight" contractor may help ensure the development and implementation of an efficient and effective program management system.
- o May demonstrate OCRWM commitment to cost-effectiveness.
- o May reduce political concerns about management of the program.
- o Can be implemented without legislation.

Disadvantages:

- o Could force OCRWM to have to defend publicly any rejection of a contractor recommendation.
- o Could be costly, both in contract dollars and staff time.
- o Could result in overemphasis on costs, versus technical, environmental, health, safety and social concerns.

Recommended DOE Position:

There are no compelling advantages evident now, but the oversight contractor and the Waste Fund Oversight Commission may be made the subject of future studies if conditions warrant.

9. Special Regulatory Counsel.

It is essential that the radioactive waste disposal organization have a dedicated counsel to handle regulatory and other legal affairs. The best way to accomplish this is through engaging the services of a private law firm experienced in the Nuclear Regulatory Commission (NRC) licensing process. The law firm would provide continuing counsel for the repository licensing process and advice to the radioactive waste disposal organization on how to handle its relationship with its regulator, the NRC. This firm should be selected through competitive bidding.

Discussion:

Legal support provided to OCRWM by DOE's Office of General Counsel is currently adequate. However, it is true that DOE has little experience as an NRC licensee. Also, the NRC will be applying new regulations to first-of-a-kind facilities, and the regulatory environment is uncertain.

Advantages:

- The employment of an experienced law firm could provide assurance that expert regulatory legal counsel is available in a timely manner.
- Would provide expert guidance in pre-application documentation and relationships with NRC.
- Could avoid delays in the licensing process that might be caused by inexperience on the part of DOE.
- Legislation is not required to implement this recommendation.

Disadvantages:

- Would add substantially to program costs.
- OCRWM already has staff members with considerable NRC experience.
- Actual benefits are unknown.

Recommended DOE Position:

Outside legal counsel may be appropriate later in the process if special problems occur. No action is warranted now.

10. Private Accounting Firm.

It is essential that the radioactive waste disposal organization have dedicated auditors to document expenditures and provide a basis to judge the progress of the program. Such documentation should be subject to business-type rather than government-type accounting standards and practices. Thus, a private sector accounting firm should be retained by the radioactive waste disposal organization to prepare annual financial statements on the program. These records should be open to the General Accounting Office (GAO), the Office of Management and Budget (OMB), and the general public.

Discussion:

DOE, as a result of a competitive solicitation initiated in March 1984, signed a contract with Main Hurdman, a private certified public accounting firm, in September 1984. Main Hurdman will examine the financial statements of the Nuclear Waste Fund and evaluate these statements in accordance with generally accepted accounting principles adopted for the private sector.

Recommended DOE Position:

OCRWM has implemented this recommendation.

11. Tenure of Chief Executive Officer.

The executive directly responsible (no matter how titled) for managing the radioactive waste disposal program should be given tenure which is not subject to changes in Administration and/or of agency heads. Although tenure of this nature is recommended, the AMFM Panel does not intend that the manager be given a guaranteed job from which he/she cannot be fired for cause.

Discussion:

The AMFM Panel was concerned that the waste program be adequately insulated from political interference, while remaining appropriately responsive. However, there is no support in the Panel's report for contention that the program has suffered from excessive political influence. This recommendation also conflicts, to an extent, with the conclusion by the Panel that there should be greater personnel flexibility. The Panel, thus, would provide tenure for the Director and remove it for the staff.

Advantages:

- A tenured Director would provide an increased degree of stability and continuity.
- The Director would be less likely to respond to political pressure.

Disadvantages:

- Legislation would be required, and there is general resistance to reopening the NWPA.
- The Director, if not responsive to the Administration, could become too isolated to be effective.
- Political accountability essential to management of a government program could be weakened.

Recommended DOE Position:

The recommendation is inconsistent with the need for political accountability and should be rejected.

12. Personnel Flexibility.

Any radioactive waste disposal organization should have the flexibility in personnel matters to accomplish the business and technical requirements necessary to implement radioactive waste disposal. Salaries and benefits should be set at competitive levels and at levels the radioactive waste disposal organization deems to be appropriate. Hiring and termination practices should be as flexible as in the private sector. A personnel system should be implemented which will enable the organization to get the best people and manage them effectively.

Discussion:

OCRWM has experienced some difficulty in recruiting the most qualified technical and management staff because of both salary and conflict-of-interest constraints imposed by current laws and regulations. However, this is offset, at least to a degree, by the positive impact on recruiting of the security provided by the Civil Service system. Exemption from Office of Personnel Management (OPM) classification standards, with retention of other Civil Service benefits, would improve the ability of OCRWM to both recruit and retain the high-quality technical and managerial staff needed for effective management of the program.

Advantages:

- Higher grades (and, therefore, higher pay) would improve the recruitment and retention of qualified staff.
- Greater flexibility to hire and fire staff would provide incentives to improve productivity.

Disadvantages:

- Such exemptions would only ease grade and salary restrictions, but not provide complete personnel flexibility for the present organization.
- Exemption of OCRWM from OPM classification standards could require legislation.

Recommended DOE Position:

While exemption from OPM classification standards would be beneficial, total personnel flexibility could not be obtained for OCRWM. DOE should consider means to designate OCRWM as an "excepted" program, but no action is warranted now.

13. Staff Incentives Program.

Regardless of whether radioactive waste management is moved to a new organization or remains at OCRWM, monetary rewards for personnel that exhibit outstanding performance are possible (bonuses are presently available to Senior Executive Service (SES) personnel). The range of other possible personnel incentives aimed at superior performance is enormous and by no means limited only to monetary rewards. In view of this range, it is reasonable to expect that any potential radioactive waste management organization could devise a persuasive plan for staff incentives either within or outside the framework of OPM policies.

Discussion:

Incentives for outstanding performance are available within Civil Service regulations to both SES and General Schedule employees. In that regard, HR 2300 has strengthened considerably the existing merit pay legislation. In addition, incentives to encourage cost-effectiveness can be included in developing performance standards upon which staff are evaluated for possible cash bonuses or within-grade step increases.

Advantages:

- o Both cash and promotion incentives enhance productivity and the technical quality of employee performance.
- o Legislation is not required.

Disadvantages:

- o Incentive systems may be subject to political abuse.
- o Incentive payments can be excessive and unrelated to benefits to the program.
- o Incentive programs are difficult to administer properly.

Recommended DOE Position:

OCRWM currently uses a performance incentives program. However, this program should be expanded to include specific incentives for cost-effectiveness.

14. Congressional Oversight.

At the present time, seven Senate and six House of Representatives Committees, and a total of ten Subcommittees, oversee the radioactive waste disposal program. This large number of Congressional committees requires extensive servicing and has the potential to cause schedule delays and increase costs. The AMFM Panel recommends that the Congress attempt to simplify the Congressional oversight process.

Discussion:

The Department believes that adequate Congressional oversight is essential. The proper degree and structure of this oversight can be determined only by the Congress.

Recommended DOE Position:

This recommendation should not be supported as it is outside the purview of the Department.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

CHAIRMAN

March 22, 1985

The Honorable John S. Herrington
Secretary of Energy
Washington, D.C. 20585

Dear Secretary Herrington:

In response to the request by Deputy Secretary Boggs on February 19, 1985 for consultation on the report, Managing Nuclear Waste-A Better Idea, I am pleased to submit the enclosed comments. Although the report was prepared by the Department's Advisory Panel on Alternative Means of Financing and Managing Radioactive Waste Facilities, I understand from your letter that when the report and DOE's internal evaluation are submitted to Congress, they will constitute the Department's fulfillment of its responsibilities under Section 303 of the Nuclear Waste Policy Act of 1982. This consultation on the study follows earlier interaction between the Advisory Panel and the NRC staff, including a briefing by the Director of the Office of Nuclear Material Safety and Safeguards on February 22, 1984 and other guidance on regulatory considerations provided to the Panel by NRC staff members throughout the period of the Panel's deliberations.

As I indicated in my July 8, 1983 letter to Secretary Hodel on this subject, I have limited my consultation on the report to the examination of potential impacts on NRC regulatory responsibilities if the report's recommendations are adopted and an alternative waste management organization is established. I have not addressed the report's accuracy or judgments of policy, such as its assertion that a corporate-type waste management organization would be more responsive to NRC and other regulators than a Federal agency would be. Similarly, I have not commented on the draft report prepared for you by the DOE internal review group, as it addresses the merits of transferring waste management functions to an alternative organization. I can inform you, however, that our relationships with your Department in carrying out NRC responsibilities under the Nuclear Waste Policy Act of 1982 have been progressing in a proper and professional manner to date.

The enclosed comments do highlight regulatory uncertainties that arise from the Panel's recommendations, and these uncertainties would need to be specifically addressed in legislation if the recommendations are adopted. Therefore, I trust that these comments will be provided to Congress as a part of your submittal of the final study results. My primary areas of concern regarding the transfer of waste management functions from DOE to an alternative organization are impacts on: safeguards responsibilities; financial protection requirements; repository post-closure considerations; implementation of the National Environmental Policy Act; and specific impacts relating to the Nuclear Waste Policy Act requirements. Each of these potential regulatory impacts is addressed separately in the enclosed comments.

If there are any questions regarding these comments, please refer your staff to Mr. Joseph O. Bunting, Chief of the Policy and Program Control Branch in the NRC Division of Waste Management, at 427-4590.

Thank you for the opportunity to consult on this subject.

Sincerely,

Nunzio Palladino

Nunzio J. Palladino

Enclosure:
As Stated

ENCLOSURE I

Comments
on

Managing Nuclear Waste: A Better Idea
Report of the DOE Advisory Panel on
Alternative Means of Financing and Managing
Radioactive Waste Facilities, January 1985.

March 1985

Safeguards

Under the authority of the Atomic Energy Act of 1954 and the Energy Reorganization Act of 1974, the Department of Energy and the Nuclear Regulatory Commission are responsible for ensuring adequate safeguarding of all nuclear facilities, to promote the common defense and security. The Commission determined in issuing 10 CFR Part 60, regulations governing the disposal of high-level wastes in geologic repositories, that certain findings regarding DOE's safeguards plans would be appropriate without further NRC safeguards review. Thus, because of DOE's own statutory responsibility to protect the common defense and security, DOE is only required to certify in its license application to NRC that it will provide the same safeguards at the geologic repository operations area as it requires at comparable DOE surface facilities (10 CFR §60.21(b)(3)). This will constitute a rebuttable presumption that the safeguards are adequate (10 CFR §60.31(b)). DOE is also required to describe in its license application the physical security plan for protection against radiological sabotage (10 CFR §60.21(b)(4)).

If the waste management program is transferred to a non-DOE entity, a comprehensive review of safeguards concerns at a waste repository will be necessary to determine how safeguards should be enforced by NRC. This issue should be clearly addressed in the consideration of any legislation transferring the program to a non-DOE entity.

Financial Liability

Appendix E of the Panel report describes the liability issue among those that were not substantively addressed by the AMFM Panel (p. E-9). With respect to recommendations for alternative organizational forms to DOE for managing the high-level waste program, Appendix E states:

> It is essential that whatever organization ultimately has program responsibility have clear authority to deal with any accident, however remote the possibility. The Price-Anderson Act can be amended to apply to repository operations or other legislation can be developed.

It is suggested that any transfer of waste management responsibilities from DOE to a new organization be accompanied by authorization for that organization to extend indemnification to its contractors. As stated in the Panel report, this could be achieved through amendments to the Price-Anderson Act, if that statute is considered the appropriate vehicle for providing liability coverage to a repository or other waste management facility, or through separate authority. Alternatively, it is also possible that NRC could exercise authority under the Price-Anderson Act to indemnify the repository licensee. It would be helpful if legislation establishing the waste management organization specified which agency or organization would be responsible for indemnification of waste management activities.

Post-Closure

The implementation of the AMFM study recommendations may result in a significant impact on controls for the post-closure period of a high-level waste repository. The waste management organization would need to assume responsibility for active institutional controls at the repository surface area for a period into the future beyond the completion of the organization's major activities. The AMFM study alludes to this problem by stating that an alternative organization "would probably be less desirable for monitoring after closure, which seems to involve custodial functions best performed by Federal or State agencies whose missions are related to protection of the environment" (Chapter XI, p. 9). However the report makes no specific recommendation regarding the performance of the active control function.

NRC requires the license amendment for permanent repository closure to include descriptions of "the program for post-permanent closure monitoring of the geologic repository" and measures "to regulate or prevent activities that could impair the long-term isolation of emplaced waste within the geologic repository" (10 CFR §60.51(a)). Long-term monitoring and other active institutional controls are not envisioned under this requirement, and should not be relied upon to verify safe isolation of waste in the post-closure period. The need for short-term monitoring, however, justifies the concern identified in the AMFM report. The waste management organization will need adequate organizational and financial resources to perform this function. Alternatively, the responsibility for implementing active control measures could be turned over to another agency of the Federal government following closure. Any legislation transferring waste management responsibilities to a new organization should take these post-closure considerations into account.

NEPA Compliance

The National Environmental Policy Act of 1969 requires the preparation of an Environmental Impact Statement in connection with any major Federal action significantly affecting the environment. Under Section 114(f) of the Nuclear Waste Policy Act, the Secretary's recommendation of a site to the President for development as a repository is to be considered a major Federal action requiring the preparation of an EIS by DOE as part of the basis for the site recommendation. Section 114(f) also authorizes the NRC to adopt DOE's EIS to the extent practicable as part of NRC's satisfaction of its responsibilities under NEPA. If a new waste management organization is created by Congress, the

NEPA provisions of Section 114(f) would still apply only if that organization would be a Federal agency automatically subjected to NEPA or, if not, was explicitly required to comply with NEPA. Otherwise, the recommendation of a final site to the President would neither be a proposal for Federal action nor otherwise subjected to NEPA. Under those conditions, the first EIS for a repository would be prepared by the NRC as part of its licensing process. This would have the effect of delaying the preparation of an EIS until after the site selection process, contrary to the current scheme in NWPA. Transfer of full responsibility for the EIS to the NRC would also delay the licensing process because the NRC could not began to prepare an EIS until after it had reviewed the applicant's environmental report. Finally, the NRC would require substantially more resource to prepare a full EIS as compared with the more limited resource needs associated with the preparation of only the parts of an EIS not adoptable from DOE's EIS.

Participation of Affected Parties

The procedures required under NWPA afford the opportunity for parties affected by waste management decisions to participate in the site selection process. It is essential that any transfer of functions to an alternative organization follow a careful review that assures these procedures remain in effect.

Judicial Review

Several specific NWPA actions are subject to judicial review under the Administrative Procedure Act. If waste management responsibilities were transferred to a non-Federal agency, that statute would no longer be applicable and, therefore, new legislation would be necessary to make the actions of a successor organization subject to the same timely judicial review as DOE's actions.

Additional Licensing Considerations

Licensing is not required for DOE to use radioactive materials in site characterization (10 CFR §60.7(a)) or in a Test and Evaluation Facility (NWPA §217(f)(2)). If an alternative waste management organization made such use of radioactive materials, licensing would be required. In the case of a Test and Evaluation Facility, this could represent a significant change in the nature of the Commission's involvement, unless specifically addressed in the legislation creating the new organization.

HIGH-LEVEL NUCLEAR WASTE ISSUES

Department of Energy's Nuclear Waste Repository Program

TUESDAY, JUNE 2, 1987

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON NUCLEAR REGULATION,
Washington, DC.

The subcommittee met, pursuant to recess, at 9:35 a.m., in room 406, Dirksen Senate Office Building, Hon. John Breaux (chairman of the subcommittee) presiding.

Present: Senators Breaux, Simpson, Reid, Stafford, and Symms.

OPENING STATEMENT OF HON. JOHN B. BREAUX, U.S. SENATOR FROM THE STATE OF LOUISIANA

Senator BREAUX. The subcommittee will please come to order.

This morning the Subcommittee on Nuclear Regulation meets to conduct the second of four planned hearings on the Federal Government's effort to implement the Nuclear Waste Policy Act of 1982. At our first such hearing on April 23d of this year we received testimony from the Honorable John Herrington, Secretary of the Department of Energy. At that hearing we clarified the policy direction that the Secretary proposes for the program.

Essentially, the Secretary's proposal, embodied in draft amendments to the mission plan, calls for first a delay in the opening of the first geologic waste repository from 1998 to the year 2003; and second, a delay in any type of site-specific work on a second geologic waste repository until sometime in the next decade. This delay has been generally justified by the fact that the Department now believes that it will need 20 years to construct and license a repository, and current estimates indicate that the 70,000 metric ton limit on the first repository will not be reached until sometime around the year 2025. And third, the Secretary's proposal calls for a Congressional authorization of the Department's plan for the construction of a Monitored Retrievable Storage [MRS] facility that would be capable of accepting waste in 1998.

At today's hearing the subcommittee will be receiving testimony from the Department of Energy and the Nuclear Regulatory Commission, as well as State, Indian tribe, and local citizens, representatives who have been involved in the Government's first round repository program.

As might be expected, this program has proved to be highly controversial. In fact, as I read through the testimony that will be presented today I thought I was reading a story of Jekyll and Hyde, so different are the perspectives as to the adequacy of the Department's efforts to implement this program to date.

According to Mr. Rusche, the President's selection of the three first round sites for further characterization activities marks a major milestone in the program and sets the stage for further thorough investigations. According to most of the other witnesses, however, the President's action was seriously—if not fatally—flawed, and sets the program up for failure. Our task, therefore, is to determine as best we can where we are in the repository program which has, since 1982, been considered the cornerstone of the Nation's effort to find a safe and permanent solution to our nuclear waste dilemma.

As I previously indicated, today's hearing is not the conclusion of this panel's examination of the Nuclear Waste Policy Act's implementation. At tomorrow's hearing the subcommittee will explore some of the issues involved in transportation of high-level waste. Finally, on June 18th the subcommittee will complete its oversight hearings with testimony on the proposed MRS facility.

These issues are critically important to the work of the subcommittee this year. It is no secret that much remains to be done to achieve a consensus and to put this Nation's nuclear waste program back on track. I would urge our Members' careful attention to the issues raised by the testimony and certainly solicit their thoughtful input into the debate.

I would like to recognize our ranking member, Mr. Simpson. Senator, any comments?

OPENING STATEMENT OF HON. ALAN K. SIMPSON, U.S. SENATOR FROM THE STATE OF WYOMING

Senator **Simpson**. Mr. Chairman, I thank you, and let the record show that it's the first time that I've ever been on time in eight years, and I wanted that clearly in the record. And you recognize that too, of course.

Senator **Breaux**. I would say that the Senator thought the hearing started at 9:00 o'clock.

Senator **Simpson**. Then it's a curse that's going to continue. I'll just show up a little earlier next time.

Well, Mr. Chairman, we do have a tough issue here, and I look forward to working with you. It is a pleasure to work with you. I enjoy you very much. You're getting deeply involved in the issues that I was deeply involved in for many years. I share the concern over this program and I pledge to work with you in a bipartisan way and with your fine staff, to fashion something to solve the problems so that we can get on with the tasks that confront us. We are surely not doing that now. There's no blame to be placed; we weren't doing it when I was chairman. We stumble around in it. It's a very significant thing; we've got 14,000 metric tons of spent nuclear fuel sitting in spent fuel pools throughout the United States, and the spent fuel is increasing at the rate of about 2,000 metric tons a year. We've got pools being reracked and utilities transshipping and sending spent fuel from one reactor to another, and now we're beginning to even see the utilities come up with a new and creative approach called "rod consolidation" to expand even further the ability of the utilities to store fuel on site. And those who raise hell with us on the issue, I guess, just prefer to leave it in spent fuel pools. They don't add much to the debate, except to get a bunch of people up and kind of babbling in the background, and that's not very helpful.

And so now we see this rod consolidation; that's an expansive move to allow the utilities to store even more spent fuel on site. I'm not sure what the effects of that would be on human health and safety; it just continues on. We have a significant and growing inventory of Defense-related high-level radioactive wastes. I have been personally involved in trying to draw them into the net, and I know that that will be something that you will be looking at carefully. And indeed, you said it well; we have to do something to get the program "back on track."

So together with the hearings tomorrow on transportation, and then the MRS issues, that should give us a range of views and testimony necessary to consider a lot of things, where we should go from here, and perhaps, Mr. Chairman, to fashion some legislation to address those various concerns. I look toward your views on that. I am ready to assist, as I said, and I look forward to hearing the views of our witnesses this morning.

Thank you, Mr. Chairman.

Senator BREAUX. Thank you, Senator.

I recognize the Senator from Nevada, Senator Reid, for any comments he may have.

OPENING STATEMENT OF HON. HARRY REID, U.S. SENATOR FROM THE STATE OF NEVADA

Senator REID. Thank you, Mr. Chairman.

I am especially grateful to you for holding this hearing, recognizing that this is an optional thing on your behalf, and I further compliment you because this is the second oversight hearing of this subcommittee on nuclear regulation under the Department of Energy's high-level nuclear waste program.

It also, Mr. Chairman, is a pleasure to welcome the many witnesses, some of whom have traveled thousands of miles to testify before this subcommittee and who are experts concerning DOE's program. Two witnesses that I want to bring special attention to are two people who have been at the forefront of nuclear waste education in the State of Nevada, and that's Bob Loux and Bob Fulkerson, who are on the panel and will testify.

Mr. Chairman, last Thursday, one year after the Department of Energy nominated Yucca Mountain in Nevada, Deaf Smith County in Texas, and Hanford in Washington as candidates for the Nation's first high-level radioactive waste repository, DOE officials met in Las Vegas with representatives from the States and affected Indian tribes in an effort to review site characterization work, expected to begin in Nevada next year. What was intended to be a warming policy in DOE's dealings with the States and tribes turned out to be a forum for complaints, essentially lambasting

Energy Department policies. In fact, a singing telegram arrived for Secretary Herrington, along with a baked cake inscribed in black letters, "May 28th, 1986, The Beginning of the End."

I call this subcommittee's attention to the meeting to emphasize the atmosphere of anxiety and distrust surrounding DOE's handling of the waste disposal problem. I am certain that the majority of those present at this hearing agree with them. On September 23d, Energy Secretary Herrington appeared before this subcommittee to discuss the Department of Energy's implementation of the program. At that April 23rd hearing I stated—

> The site selection process, not only for Nevadans but for all Americans, must be accurate, as accurate as possible, and it must be administered fairly or the final site selection will not be accepted by anyone if the program is fatally flawed. At this point I believe it wise to consider imposing a moratorium on site-specific activities and follow the siting process set forth in the 1982 act.

A general consensus is growing which includes first round and second round repository States, those affected by the proposed Monitored Retrievable Storage facility system, and transportation corridor States, that a moratorium of limited duration should be imposed on any further actions under the Nuclear Waste Policy Act. Coupled with the moratorium is the belief that an independent review commission should be established to oversee the implementation of the Nuclear Waste Policy Act, and funds should be provided to study alternative storage technologies. In short, the public has lost confidence in the process. The entire site selection process has become one of political expediency rather than technical suitability meant to ensure the health and safety of the public.

My distinguished colleague from Maine pointed out previously that there are no quick or easy solutions to this problem. I agree, and believe a temporary halt should be placed on the program while a complete and independent review is made.

Again, Mr. Chairman, I want to thank you for holding this hearing. I am going to have to go to the House to testify over there in just a few minutes, but I shall return. Thank you very much.

Senator BREAUX. Thank you, Senator, for your concern and your work with this subcommittee in this process.

I'd like to ask unanimous consent at this time to introduce a statement from Senator Chic Hecht, also from Nevada, which will be made part of the record.

[The statement of Senator Hecht follows:]

STATEMENT OF HON. CHIC HECHT, U.S. SENATOR FROM THE STATE OF NEVADA

Mr. Chairman, I appreciate the opportunity to testify before the subcommittee today on the Department of Energy's Nuclear Waste Repository Program. The Nuclear waste issue is of great concern to Nevada, and how the Congress handles this issue will have significant implications for our Nation's energy future, environmental quality, an economic competitiveness in the world.

The Nuclear Waste Policy Act was signed into law by President Reagan just a few weeks before I took my seat in the United States Senate. While I therefore did not participate in the legislative process that led to passage of that legislation, I have nonetheless, become a very dedicated student of the act and the program that was set up to implement it.

As a member of the Senate Energy Committee, I have participated in many oversight hearings on this subject over the last five years. Earlier this year, I traveled to Europe with a number of our colleagues, including Senator Simpson of this committee, to study the successful nuclear waste programs that are up and running there.

I understand there may be a little confusion on the part of some members of this committee as to my position on the nuclear waste issue. I would like to take this opportunity to make that position quite clear. I have never advocated putting a nuclear waste repository in Nevada. I have always urged that nuclear waste should be disposed of safely and sensibly, and like many members of this committee, I have spent a great deal of time trying to discover the best way to accomplish this. As I stated earlier, I came to the Senate a few days after the Nuclear Waste Policy Act became law. Out of respect for both the law, and my colleagues who worked so hard to fashion a compromise on that legislation, I took what I consider to be the only responsible approach. I carefully watch to see how the new law would be put into practice.

Over time, it became clear that the Energy Department considered Yucca Mountain in Nevada to be a prime candidate for a repository. Out of respect for the law, and in recognition of the need to find a real solution to a real problem, I resisted the temptation to grab headlines by making non-productive, inflammatory statements about the consideration of Yucca Mountain. I maintained my position that the intelligent and fair course of action would be to let the program go forward, according to the law, until the facts could speak for themselves. I told the people of Nevada that I thought a United States Senator should deal in facts, and that to do otherwise reduces one's credibility and effectiveness in the Senate.

Regrettably, by 1985 the Energy Department had demonstrated clear signs of straying from the law with regard to cooperation and consultation with the States. On several occasions, I had to personally intervene with the Department, in order to free up grant monies necessary for Nevada to pursue its role under the act. Then, on May 28, 1986 the Energy Department boldly announced its intention to flagrantly violate the law by indefinitely postponing work on a second repository. By that time, I had spent enough hours presiding over the Senate to know that "indefinitely postponing" something was the same as sending it to a legislative graveyard. The Department had, in effect, announced its intention to break faith with the Congress and the American people. With it now clear that the rule of law was no longer governing the actions of the Department, I decided it was important for me to join several members of the Nevada delegation in challenging the Department's action in the courts.

Over time, more evidence accumulated that the administration of the waste program was unreasonable, and unacceptable. On many occasions, I insisted that any site characterization of Yucca Mountain must consider the impact of nearby nuclear weapons testing on the proposed repository. This would seem to be an obvious technical question to ask, but it was a year before the Energy Department agreed that this matter should be considered in a site characterization plan.

As the Department's conduct become more arbitrary, I concluded it had become necessary to stop the current program in its tracks, and search for an intelligent and rational alternative that would rebuild the faith of the people of Nevada, and the Nation, in their Government's ability to deal with the nuclear waste issue in an honest and effective manner. To buy us all some time to sort things out, I supported the successful effort to cut funding for the program is fiscal 1987.

Mr. Chairman, this is the year of the Constitution. Our Constitution is based on the premise that in our Government it is the people that rule. Federal agencies exist to carry out the will of the people, as expressed through their elected representatives in the Congress. The people of Nevada have lost faith in the current Nuclear Waste Program because they do not feel the Energy Department is carrying out the law as the Congress intended. The Nuclear Waste Program has lost a lot of credibility. Things have gotten to the point where if certain Energy Department officials were to go to Nevada and promise that the sun would rise the next morning, the local hardware stores would experience a run on light bulbs.

The Energy Committee recently held hearings where a number of scientists testified that the three sites chosen for characterization for a repository could not be rejected at this point, although characterization might eventually prove them unsuitable. Some have taken this as a signal that site characterization should proceed. I disagree. The process that led us to this point is characterized by disregard for the law, and an unresponsive bureaucracy. This has resulted in a loss of public faith in the basic fairness of the Government's course of action. The process has been so faulty that the entire program has become discredited. Unless this situation can be rectified, I will oppose any attempt to locate a repository in the State of Nevada.

I believe that it is at least as important for our people to trust their Government, as it is for that Government to pursue technically sound policies. A Government that does what is best from a technical standpoint, but runs roughshod over the rights of its citizens and the States, may be a good dictatorship, but it's a bad democracy.

This Congress needs to convince the public that a Nuclear Waste Program can be run fairly, effectively, and in accordance with the law of the land. If this can't be done under the existing law, then we should change the law.

This means we must put a hold on the current program, and alter it in such a way that the people can once again have confidence in the Federal Government. Happily, I think there are some basic improvements that we can make in the program during this time, this cooling off period. I believe that we can learn some lessons from the successes in Europe. First, we should let spent nuclear fuel remain in above-ground storage for fifty years before moving it to a repository. It will then be both thermally and radioactively cooler, making it safer and cheaper to handle, transport, and dispose of. Several weeks ago I introduced S. 1141, a bill which would provide for such a longterm storage period before waste is placed in a repository.

Second, we should take advantage of a moratorium on the current program, not only to take steps to get the program back on the right track, but also to reexamine the feasibility of reprocessing spent fuel as a way to reduce the danger of nuclear waste. I have introduced S. 1211, a bill designed to accomplish such a study.

I have heard two objections to reprocessing: first, that it is expensive, and second, that it raises the dangers of nuclear weapons proliferation. I understand, however, that if spent fuel were stored for a few decades before reprocessing, then the cost of reprocessing would go down significantly. Also let's not forget that in the absence of reprocessing we will have to proceed with a fullblown first and second repository program, and one or more monitored retievable facilities, at a cost of many billions of dollars.

With regard to the proliferation question, I understand the French have been reprocessing for more than twenty years now, and I am not aware of any evidence that this activity, which is taking place so much closer than we are to the Mideast, and other volatile parts of the world, has in any way increased the proliferation of nuclear weapons. If French reprocessing has not led to proliferation, then I doubt American reprocessing would.

I hope the committee will be able to support both of my bills, S. 1141, and S.1211.

Thank you again, Mr. Chairman, for the opportunity to testify here today on the repository program. I look forward to working with members of the committee on this and other aspects of the Nuclear Waste Program.

Senator **Breaux**. We'd like to welcome up our first panel this morning, which will consist of Mr. Ben Rusche, Director, Office of Civilian Radioactive Waste Management, Department of Energy, and Mr. Hugh Thompson, who is Director of the Office of Nuclear Materials Safety and Safeguards, Nuclear Regulatory Commission. Gentlemen, we are pleased to have you with us.

Mr. Rusche, we have you listed first.

STATEMENT OF BEN C. RUSCHE, DIRECTOR, OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT, DEPARTMENT OF ENERGY

Mr. **Rusche**. Mr. Chairman, members of the committee, I am delighted to have the opportunity to meet with you in this continuing set of discussions on the Nation's civilian radioactive waste management program. I appreciate the opportunity of appearing before you today. My intent will be to briefly get before the committee some discussion of the major business which is before the Department at this time, namely, site characterization of the sites selected by the President for characterization.

I will focus my testimony on the Site Characterization Plans, the strategy for resolving technical issues raised by the NRC during site characterization, our plans for interacting with the National Academy of Sciences during site characterization, and our strategy in general for assuring technical excellence through each step.

In your opening comment you noted the decision by the President on May 28th, 1986, in which he accepted the Secretary's recommendation that he select three sites for characterization as candidates for the Nation's first geologic repository for spent fuel and high-level waste. I couldn't help but note Senator Reid's reference to that date, May 28th, 1986, and his reference to the events which transpired in one of the lovely cities in his State last week in which a singing telegram was indeed delivered—not quite characteristic of the character of the meeting that we had hoped for, but it was brought in by a lovely young lady and presented to members of my staff and others as a commemoration of the importance of that date. All joking aside, I think the date was and is an important date in the context of this program, but beyond that, in the context of the country.

We continue to try our best to work with those who are directly affected. I think Senator Reid, even in his opening statement, alluded to the fact that there are those in the States and the Indian tribes who are directly affected who have a number of views on the subject, many of which do not fully coincide with our views, and our objective and charge under the law is to try to work together. You noted yourself, in your opening statement, that when you read some of the testimony that will be presented today that you could recognize that there were at least two views on many of the subjects that we have before us.

We have continued to try to expand consultation activities and have under preparation a report which I believe, when completed—it will be ready for submission to the Congress very shortly—will tabulate our best effort at making you aware of the efforts we have exerted that, hopefully, will warrant your release of the $79 million which was embargoed last year.

We have increased our efforts to negotiate Consultation and Cooperation [C&C] agreements. We are considering a number of new initiatives to encourage these negotiations. For example, we have indicated our willingness to consider adoption and implementation of a de facto agreement or memorandum of understanding that would be of smaller scope than a full C&C agreement should the State or affected Indian tribe find this advantageous. This would permit the adoption of procedures agreed upon by the parties immediately, even before the C&C agreement is fully developed. And some have said that we may never get to the place where such an agreement would be reached between the two parties. I hope that's not the case, but we're certainly charged with trying.

Such an approach is attractive because it recognizes the importance and the achievements of the negotiation process that has been underway since the Nuclear Waste Policy Act was signed into law.

But C&C negotiations and agreements are but one part of the process of working with the affected parties. Interactions with these parties occur every day. In addition, a number of actions outside formal C&C negotiations have been taken recently as a result of recommendations from many of the parties. For example, States and Indian tribes have requested that they be allowed and invited to attend all of our Coordinating Group meetings. There are 12 Coordinating Groups that we function with and through in the conduct of the program, and we have so agreed.

We have also agreed, in response to requests from our colleagues and the States and affected tribes, that the quarterly meetings, such as the meeting that Senator Reid referred to in Nevada last week, be open for the public to attend. We have so agreed and have now had two such meetings with public attendance. Senator Reid gave you a graphic account of last week's meeting.

There are currently 12 Coordinating Groups, and I have prepared a list which I would be glad to have in the record if you would care to, sir. Coordinating Groups meet two to four times a year and provide a forum for the discussion of common problems and their resolution. It is expected that additional Coordinating Groups will be established and existing ones abolished or changed as requirements and priorities change.

We have held public meetings since the summer of 1984 on a quarterly basis in general as a result of the recommendations that I just referred to. These meetings are now open to the public. The first such meeting was held on February 12th of this year in Spokane, Washington. The agenda was coordinated among the States, the tribes, the DOE, and a public announcement was made by our Operations Office. The draft DOE Mission Plan amendment was a major topic of discussion at that meeting, and then last week we had the second meeting in that series.

I mention these activities because I believe it's important to point out that while formal consultation and cooperation negotiations are only required to begin after a candidate repository site is approved for site characterization, consultation and cooperation are everyday activities and are the responsibility—in fact, DOE's responsibility, as well as the States' and Indian tribes' responsibility—of all the affected parties.

We are going to do our best to continue to work with our colleagues whose interests are clearly an important matter in the conduct of this program. I think, though, that we may well find, as discussion and testimony today will probably reveal, that we have some different views. We do have fairly explicit direction provided in the law, and we are charged with trying to meet a diverse set of—in some cases, even conflicting—requirements in the law, and I'm sure that as time goes on we will find that our efforts can be improved, and we'll do our best to work to that end.

Let me turn our attention now for a few moments if I may, sir, to site characterization efforts, and perhaps be very brief so that we'll have as much time as possible for questions.

Prior to the nomination and recommendation of sites for characterization, and through extensive field studies and analyses, documented in perhaps tens of thousands of pages of documentation, DOE determined that all of the nine potentially acceptable sites formally identified in February of 1983 were qualified for further study based on the siting guidelines developed and concurred in by the NRC. The selection of sites for nomination and recommendation was born out of an extensive technical effort through which draft environmental assessments were prepared on each of the nine potentially acceptable sites, to analyze and evaluate available data relevant to the suitability of the sites. A subsequent analysis, entitled "The Multiattribute Utility Analysis," of sites nominated for characterization of the first radioactive waste repository, a decision-aiding methodology, was developed and finalized by DOE to aid in gaining insight into the attributes of the five nominated sites. The suitability and application of this methodology was reviewed and commented on by the National Academy of Sciences. The decision-aiding methodology was a refinement of one of several methods proposed in the draft environmental assessments in 1984. It utilized the data and analyses in the environmental assessments in a decision process that allowed disaggregation of a complex set of objectives into component parts for evaluation, and then reaggregation to determine both a composite ranking of the nominated sites and additional significant information relevant to determining an initial order of preference.

In addition, we considered the provisions in the siting guidelines for diversity of geohydrologic settings and diversity of rock types in arriving at a final order of preference. Based on these considerations, the Secretary recommended three sites as candidate sites for characterization as he recommended them to the President.

In addition, consistent with the requirements of section 114(f), the Secretary made a preliminary determination that these three sites are suitable for development as geologic repositories consistent with the siting guidelines, on a preliminary basis.

NRC has subsequently provided comments on the site selections. While numerous concerns have been identified by the NRC staff relative to each site, their concerns are of the nature anticipated at any site for which the existing data base is limited. Such concerns, we believe, can only be addressed through the characterization process, which was wisely established by the law. The process began formally with the President's decision on selection of sites.

The purpose of site characterization is to collect the extensive geologic and environmental data that are necessary to evaluate the suitability of a site for development as a repository; to develop site-specific designs, both for the repository and for the waste package to be placed in the repository; to prepare an environmental impact statement, and to develop the necessary information for a construction authorization request for a repository from the NRC.

Site characterization will take five to seven years, depending on the site. It consists of surface-based field studies, construction of exploratory shaft facilities, and the detailed tests conducted below surface in that facility.

Surface-based field studies involve data collection activities such as geologic mapping, seismic surveys and hydrologic studies, as well subsurface investigations conducted by deep and shallow bore holes that will be used for ground water monitoring, core extraction, laboratory testing, stratigraphic, tectonic, geochemical, and geohydrologic studies.

Site characterization will also involve studies conducted in the candidate host rock in the exploratory shaft facilities. These facilities provide access to detailed study of the host rock and will consist of two exploratory shafts at each candidate site that will provide for access to the host rock at depth, for the transport of people and equipment, and for ventilation; will provide underground testing areas; and will provide surface facilities needed to support construction and testing. The shafts will be sunk approximately to the level where the underground facilities are envisioned, 1,000 to

4,000 feet below the surface, depending on the site. At this level the shafts will then be connected to one another and to underground testing areas, which will be mined out. The shafts and the underground testing areas will be used to make observations and measurements of site conditions in the precise location where a repository might be considered. The surface-based tests will continue during the construction of exploratory shafts, and will be continued in the ESF facility.

Although we had planned earlier to begin exploratory shaft construction at one or two of the sites this year, Congress in the appropriation for the waste program for fiscal year 1987 specified that no funds are to be used for drilling any exploratory shaft at any site in 1987, but you did allow for site-specific work other than exploratory shaft drilling to be conducted at reduced funding levels.

The current activities at, or related specifically to, each of the candidate sites include the following.

At the Nevada site, the primary activities are completion—in fact, for all three sites—the primary work is related to completing the Site Characterization Plans. At the Nevada site specifically, land access is being pursued with other Federal agencies as these plans proceed. In Washington, site plans are proceeding for hydrology tests that will begin prior to initiation of exploratory shaft drilling.

In Texas, we are proceeding with plans for obtaining access to the land; have established area offices in several locations; and, as of today, we have about 65 DOE and contractor personnel from our Columbus office and its contractors. Unlike the Nevada and Washington sites, there has been no DOE office for this program located near the site or in the State of Texas.

Let me just briefly state that the Site Characterization Plans are provided to make clear the intent of the Department with respect to identifying issues that need resolution and developing approaches to resolving those many issues. The SCP's follow the issues hierarchy and issue resolution strategy that were outlined in the draft Mission Plan amendment and have been covered in greater detail in a subsequent document named, "Issues Hierarchy for a Mined Geologic Disposal System."

There is intense interest in the Site Characterization Plans because they will guide DOE during the site characterization phase until a license application is submitted to the NRC. The SCP's and periodic progress reports that DOE will be making will have a crucial role in the interactions with the NRC and as vehicles for presenting information to the States, Indian tribes, to this body, to utilities, and the public.

To assure that critical issues are being addressed, a number of technical meetings with the NRC on selected topics have been held or are being planned for the future, and I suspect Mr. Thompson may have something to say about them. Meetings have been held with the Commission, States, and Indian tribes to discuss our issues hierarchy and performance allocation process. The geohydrology testing program for the Hanford site was one of the important subjects on which we have recently had discussions.

The technical issues raised appropriately by the NRC staff through their comments on the environmental assessments are being looked at carefully and considered systematically by the Department in developing the final issue resolution strategies that will be contained in the SCP's.

I might inject a note that Site Characterization Plans are plans. They are not contracts. They do not attempt to predict what we will be doing on the afternoon of June 3rd, 1994. They indicate our best estimate of how we will approach the program, so they will be subject to revision as new data become available and we will attempt to make all of the affected parties fully aware of such new information and how it affects our thinking of what the program should be.

After issuance of the SCP's, which will have been made available in draft form—generally chapter by chapter—to States and Indian tribes, and to the NRC, the SCP's will be completely reviewed further by the NRC staff, by affected parties, and public hearings will be held in each of the locations near the sites, and comments will be requested. The NRC has agreed informally to provide early comments of any exploratory shaft-related concerns so that we may have the benefit of those as early in the program as possible. And finally, they will provide detailed analysis and comment in their site characterization analysis report, which will represent a comprehensive statement of the technical issues of concern to the Commission. We are committed to consider all such comments received and issue a comment response document.

We will report on the site characterization program through semiannual progress reports. We will have meetings on difficult topical issues, which will be held frequently with the NRC, with the States and tribes, as data collection proceeds. We expect that NRC will review and provide comments on those topical reports and other material by DOE for technical meetings. We will consider all comments and will attempt to reach closure on technical issues throughout the period of site characterization, hoping that these issues will have been resolved before we finally enter the formal licensing process.

Let me just say a word about our interaction with panels of the National Academy of Sciences as I bring my comments to a close.

With regard to interaction with panels of the National Academy of Sciences Board, the NAS Executive Commission recently approved and submitted to DOE a formal proposal to establish three site-specific panels to overview site characterization activities. We welcome the opportunity to continue to receive the recommendations of the Academy.

The DOE currently interacts with the NAS on topical issues, for example, through the National Committee for Rock Mechanics and other such committees, and will continue to encourage this interaction. With these panels, we will be working closely with the NAS to assure that they have the information required to develop and implement their scope of work for their independent technical review. We will develop procedures in conjunction with the Academy that will assure that their appointed site-specific panels have timely and complete access to all plans and data available. We will also provide for routine meetings and briefings as requested by the Academy on individual site-specific topical issues. The panel comments will be fully addressed as site characterization activities proceed.

I would note that in that proposal, they provide for participation by the States and affected Indian tribes in their activities as an element of oversight.

Assuring technical excellence during all aspects of the site characterization process is the central focus of our effort.

Mr. Chairman, there are many other things that I could say but I believe it would be timely at this point for me to terminate my comments and take your questions, or be prepared to take your questions whenever you are ready, sir.

Senator BREAUX. Thank you, Mr. Rusche.

Mr. Thompson?

STATEMENT OF HUGH L. THOMPSON, JR., DIRECTOR, OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS, NUCLEAR REGULATORY COMMISSION

Mr. THOMPSON. Thank you, Mr. Chairman. I appreciate the opportunity to provide NRC's views on four current matters related to the Department of Energy's civilian high-level radioactive waste program. I have a summary statement and with your permission, I would like the full statement to be included in the record.

Senator BREAUX. Without objection.

Mr. THOMPSON. First, the NRC staff's comments on DOE's final environmental assessments. The NRC staff comments on the final environmental assessments for potential repository sites were part of the pre-licensing consultation between the staffs of DOE and NRC. The intent of our comments on the environmental assessments was to assist DOE in preparing high-quality Site Characterization Plans for each site. It was not our intent that the final EA's be modified or that the progress on the site investigation program be halted. The NRC staff review of the EA's was limited to the specific responsibilities of NRC.

Our December 22d, 1986, letter to DOE noted that significant effort had been made to respond to each of NRC staff's major comments on the draft EA's, and DOE had resolved many of these comments. However, in each of the final EA's, the staff review identified some concerns in which DOE had not incorporated a reasonable range of uncertainties and alternative interpretations into their evaluations and conclusions.

At this stage of the site investigation and screening process, there is inherent uncertainty in site information that can lead to alternative interpretations of data. Furthermore, resolution of uncertainties, such as those identified in our comments, can only be addressed through the site characterization process.

I should note that if we did not mention a concern in our final EA comments that had been identified earlier, it was because we believed that DOE had adequately recognized in its final EA's the need to resolve that concern and not because we believed that that concern had been resolved and was no longer a potential issue for licensing.

The second matter is NRC comments on DOE's draft mission plan amendment. On April 7th, 1987, the Commission sent to DOE its comments on the draft mission plan amendments, generally supporting the proposed amendment but noting no technical reason to link the MRS operation to the repository construction authorization. DOE has made a significant commitment in the draft amendments by specifying six activities to make maximum use of the near-term extension of the schedule and to increase confidence that the Commission's review of the license application can be completed within the 36 months allotted for that review by the Nuclear Waste Policy Act. These six activities are responsive to earlier Commission comments on DOE's program.

The third matter is DOE's program and the NRC-DOE interaction. Based on our review of the DOE high-level waste program to date, we believe there is no technical reason why site characterization should not continue. The high-level waste repository is a first-of-a-kind facility involving complex, unique technical issues that can only be resolved through a detailed site characterization program.

There has been a continual overall improvement in the DOE program to develop an adequate data base, as demonstrated particularly by recognition in the final EA's of many of the earlier NRC concerns. DOE's recent briefing of the NRC staff and the affected States and tribes on the DOE issues hierarchy and the issue resolution strategy laid out a logical and rigorous way of identifying issues and the data needed to resolve them. How DOE implements the issue resolution strategy is the key to whether it is headed in the right direction. The NRC staff review of the Site Characterization Plans will assess progress in this area. One early indication that DOE is making progress in this area is in its recognition of the need to conduct key hydrologic testing at the Hanford site prior to construction of the exploratory shaft.

The NRC-DOE pre-licensing consultation has generally been adequate to permit NRC to perform timely reviews of DOE's programmatic documents. As in any major program involving technical and engineering approaches that go well beyond the normal practice and experience, issues which need to be addressed and resolved are being identified. Therefore, NRC and DOE continue to work toward improving communications on these types of issues to ensure that they are being addressed as early as practicable. Moreover, NRC recognizes the need to develop additional regulatory guidance to assist DOE in this aspect of its program development.

Currently, both DOE and NRC are working to continue to improve our interactions, as well as to ensure that the States and Indian tribes have opportunities to participate substantively in these interactions.

Finally, I would like to address the concerns of the States and the tribes. The potential host States and affected Indian tribes have cited NRC comments on DOE's final environmental assessments in support of their views that site characterization on the individual sites should not continue. Although NRC concerns have been identified for each site, they are of the sort anticipated at any site where the existing data base is limited. While these concerns should not disqualify the sites from further suitability testing, they could have serious implications for the licensability of each site if they are not satisfactorily addressed by DOE and resolved through the site characterization process.

Licensing concerns exist for all nine of the sites that were identified by the DOE in February, 1983 as potentially acceptable sites for a mined geologic repository. In fact, these licensing concerns would be expected to exist for any potential site with a limited data base. NRC staff review of the nine draft EA's found no disqualifying factors for any site, but raised concerns similar to those in the NRC staff review of the final EA's. Hence, NRC staff concerns about the three sites selected for site characterization were not to suggest that DOE should select other sites, but to develop data to evaluate the validity and significance of such concerns relative to site suitability for licensing.

In conclusion, Mr. Chairman, we believe there is no technical reason relevant to NRC's responsibilities why site characterization should not continue. The high-level waste repository is a first-of-a-kind involving complex, unique technical issues which can only be resolved through a detailed site characterization program. And with respect to the DOE draft mission plan, NRC's comments generally support the proposed amendment.

Senator BREAUX. Thank you, Mr. Thompson, and thank you, Mr. Rusche, for your testimony.

Senator Simpson and I were just discussing how long this process takes, and have concluded that probably neither one of us will be around for the ribbon-cutting ceremony when the first one is opened. We just hope we get to that point one day. We've got problems, as Senator Simpson was pointing out, just trying to dispose of 3,000 tons of New York garbage which we can't find a disposal site for; to dispose of this material is far more complicated.

I'd like to go ahead and recognize Senator Simpson, who has to be on the floor at 10:30, for any questions he might have.

Senator SIMPSON. Mr. Chairman, I thank you. That is, indeed, an irony. The odyssey of the garbage barge—and all it's got in it is a few old cans and odds and ends; I don't know who's been going through that garbage, but that must be a fascinating adventure in itself—but it's obviously necessary because somebody is doing it. Maybe they're site- characterizing it.

Mr. RUSCHE. They are geologic explorations from the surface.

Senator SIMPSON. Yes, deep geologic exploration.

Anyway, imagine what it comes to when we start to move the real stuff, and that's what's so troubling because it's funny, but it ain't funny. I guess that's the way Americans are. They will eventually, in some highly dramatic situation, decide that there are some things bigger than just holding rallies and standing around and congressional inaction—we're all at fault. I take my full share of it, too. I can always find something else to do when I see the interest groups that are gathered to resist anything except talk about it, and then always talk about the human health and safety. What do we do? Nothing.

Anyway, I had just a couple questions, and I thank you, Mr. Chairman. I've got to go over and open the shop for Senator Byrd.

It had been reported that you intend to announce a one-year delay in the exploratory shaft. This is media reports, a one-year delay in the exploratory shaft for the Hanford site in order to give some further consideration to the hydrologic tests that you intend to conduct during site characterization.

Do you intend to delay site characterization at the Hanford site? And if so, what are the reasons for that decision?

Mr. Rusche. Senator Simpson, we do not intend to delay site characterization but we have determined, in concert with our colleagues from the Commission and from the States and Indian tribes, that it would be advantageous to gain a body of data about the geohydrology, particularly the hydrology of a certain type, before we began at least deep exploratory shaft work. That was the subject of a series of meetings that we had, and Mr. Thompson referred to that meeting in his testimony, as did I, in which I think we had one of the more effective interactions of the several parties.

The outcome of that meeting was that the plan that we will follow with respect to gaining that data will, indeed, introduce some delay in completing the exploratory shaft. I do not think we have finalized the plans yet. The one year that I believe you referred to as reported in the press derived from the fact that the tests themselves will take about a year. It may not be necessary to wait the entire year; there may be other work that we can do in that period that does not compromise the activity, but we have not made a final decision on that.

Senator Simpson. Okay.

It has been reported, too, that the projected cost of site characterization will be "higher than previous estimates," I believe is the phrase, and that program costs will increase 10 to 20 percent. Are those reports accurate? And what are your current cost estimates for characterizing the three first round sites?

Mr. Rusche. I think I'd prefer to give you those answers in writing if I might, please, Senator. Every year we conduct a new total life cycle cost estimate study, and that report will be ready to transmit to the Congress before this month is over. I have some early estimates and I think they do reflect some increase in cost, particularly as a result of the extension of the program.

So if I may, rather than just talk off the top of my head.

Senator Simpson. If you would.

[The information to be supplied follows:]

The latest estimate of the cost of characterizing each of the three candidate first repository sites was developed for the 1987 Total System Life-Cycle Cost (TSLCC) Estimate. The estimates are as follows:

1987 TSLCC Analysis (in 1986 dollars)

Basalt	1,592
Tuff	1,153
Salt	1,352

The above cost estimates include all costs occurring at each candidate site from Presidential approval of candidate sites through submittal of the license application. Included are costs for site data collection and analysis, waste package design and development, respository design, grants to State and Indian Tribes, payments-equal-to-taxes to States, Indian Tribes, and units of general local government, and licensing interactions.

Senator Simpson. I remember so well that the first figures on site characterization were, I think, $100 million, and now we're at $1 billion, and that's surely an extraordinary figure to my mind.

Just one other thing. I thank you, Mr. Chairman, if I could just shift gears for a moment.

It is suggested that the delay in emplacement of spent fuel in a repository is for the purpose of further cooling of the fuel as it decays, or for the purpose of reprocessing.

First, on this issue of cooling, based upon your current projected fuel acceptance schedule, which we see, and based upon a repository opening date of the year 2003—and I think we will be long of tooth and grayer of hair before we ever see that date—how old will the spent fuel be when we get around to putting it in a repository? In other words, how long on average will this spent fuel already have been cooling in pools, spent fuel pools?

Mr. RUSCHE. Most of the studies that we have done to date, based on the acceptance schedule that's in the draft Mission Plan amendment, suggest that at least for the first 15 or 20 years of the program, the average age of the fuel will be greater than 20 years, approaching 25 to 30 years depending on a couple of logistical factors. The design of the repository is based on 10-year-old fuel, and that's because you have provided for us guidance in the law that says we must be prepared to accept 10-year-old fuel if necessary. But based on the acceptance schedule that's in the draft Mission Plan amendment, the average age is about 25 years.

Senator SIMPSON. Well, then, how much additional benefit, based upon the average age of the fuel, would we get in terms of radioactivity and heat if we were to delay emplacement of the fuel in the repository for, say, an additional 15 to 30 years? And does that then translate into benefits in design of this facility or the cost of the new repository?

Mr. RUSCHE. The additional 15 or 25 years for 25-year-old fuel would produce something less than a factor of 2 in reduction of the heat generation rate, if my recollection is correct. That factor of 2 is not trivial but it is by no means very determinative in the design of the repository.

You will recall that the repository is not constructed at one time. We have this huge thing that is sitting there, and we put fuel in it. We design the repository for certain capabilities, and then as we move ahead with emplacement of fuel, we are constructing the repository as we are emplacing the fuel. And we have the opportunity to make adjustments as we go along, so the effect on the repository design would be minimal, if even detectable.

Senator SIMPSON. So it would be kind of like "design as you go," like we do with reactors which make them start at $300 million and end up at $5 billion? Isn't that the way it will be, "design as you go"?

Mr. RUSCHE. Not quite. We know what the properties of the rock will be, and what we will do will be design this placement—that is, the spacing, primarily—of the fuel that we're going to be emplacing to optimizing it for that rock.

Senator SIMPSON. I wish it were so. I thank you, Ben, and I thank you, Mr. Chairman.

Mr. RUSCHE. If it's not so, I hope you'll tell me so we can fix it.

Senator SIMPSON. Well, I will, but it won't do me any good anyway.

Senator BREAUX. Senator Stafford, any comments at this time?

Senator STAFFORD. Thank you, Mr. Chairman. No, I do not. I've been trying to play catch-up here while the witnesses were being examined by Senator Simpson by reading their statements. I'm sorry I wasn't able to get here in time to hear them in their entirety.

I have no questions.

Senator BREAUX. Let me get some questions on the record for the witnesses about the status of the Site Characterization Plans. How much was requested, Mr. Rusche, by the Department for fiscal year 1987 for the site characterization activities, and how much of that request was actually funded for fiscal year 1987?

Mr. RUSCHE. Senator, I don't have the breakout just in my head. If I can talk about the program, that would be one way to start the answer; and if there is additional detail, I'll be glad to get it in writing.

Senator BREAUX. Well, are we meeting the mark? That's what I'm trying to find out. Using 1987 as the parameter for what you requested and what we actually funded, are we in the neighborhood of being sufficient to carry out what you need or not?

Mr. RUSCHE. No. No.

Senator BREAUX. How much do we lack, and what do we lack in?

Mr. RUSCHE. I believe the request as it came to Congress for 1987 was $769 million. What was approved by Congress was $500 million—really, $499 million—of which $79 million was made available only upon subsequent approval of the Congress of our consultation and cooperation activities.

Let me correct myself. The number was $710 million rather than $769 million.

Senator BREAUX. That was requested, $710 million?

Mr. RUSCHE. Correct, and the actual appropriation was $420 million, with an additional $79 million to be made available at a later date contingent upon our certification of adequate C&C activities.

Senator BREAUX. That was for all activities, I take it, not just site characterization?

Mr. RUSCHE. That is correct. For the repository, which includes primarily site characterization, those numbers were $542 million requested and $307 million appropriated.

Senator BREAUX. You indicated in the testimony that the congressional moratorium had set back the plans for the current fiscal year. Is that correct?

Mr. RUSCHE. Yes. The continuing resolution contained language which prevented or prohibited the use of any of those funds for actual exploratory shaft drilling.

Senator BREAUX. But as I understand it, the act requires you to prepare a Site Characterization Plan. That has to be put out for public hearing and comment, and presumably that plan would propose the carrying out of the exploratory shafts being developed and actually pursued. That whole plan has to be the subject of a public hearing.

Mr. RUSCHE. Indeed, it does.

Senator BREAUX. I don't understand how we can say that Congress delayed it because we prohibited the exploratory shaft being drilled in fiscal year 1987. Your plan to propose that hadn't been completed yet, nor has it been the subject of public hearings. It wasn't ready had Congress not passed the moratorium, was it?

Mr. RUSCHE. I suspect that I differ with you in that at the time that the proposal for the 1987 budget was made, we were on a schedule to have had that plan ready in time to begin exploratory shaft work at the very end of this fiscal year.

Senator BREAUX. But Congress didn't do anything to stop the plan, did it?

Mr. RUSCHE. Congress said, don't use the money. So we took the time with the lower funding and recast the program so that we could use the money more effectively.

Senator BREAUX. Congress didn't pass any prohibition against preparing the Site Characterization Plan. I think the moratorium merely said, don't use any of it to actually drill an exploratory well.

Mr. RUSCHE. It did, indeed.

Senator BREAUX. It did indeed what?

Mr. RUSCHE. Prohibit use of the funds for exploratory shaft work.

Senator BREAUX. But not for the preparation of the plan calling for it and having that plan presented to the public for public hearing and comments?

Mr. RUSCHE. That is correct. That is correct.

Senator BREAUX. So what I'm saying is, if we had not passed the moratorium you would still be in the same place that you are right now as far as the plan is concerned, would you not?

Mr. RUSCHE. I do not believe so.

Senator BREAUX. What would you have done differently? The only thing we prohibited was the sinking of the shaft. We didn't prohibit the plan or the development of the plan or continuation of the plan or the public hearings on the plan or anything else, did we?

Mr. RUSCHE. No, sir. What we did, though, as a result of not being able to have the authority to start the shaft work, was recast the program and do some things earlier in light of the fact that shaft work would begin at a later time. If we had continued on the course that we were on at the time that the 1987 budget was submitted, the Mission Plan would have been out for comment and we would have been prepared by about this time to begin shaft work. After we got the direction from Congress, it seemed to me to be a prudent management course to determine how to use that time best. It didn't make much sense to have the plan sitting around, ready to go, twiddling our thumbs, waiting on the authority to appear.

Senator BREAUX. Hearing on the plan have not been held yet, have they?

Mr. RUSCHE. No. We have greatly expanded the scope of the plan as a result of this time. I think we have made it better, and in that sense I think that the time has not been poorly used. In fact, I suspect some of my colleagues from the States would say that what we've done is make major improvements, and I think there's an element of truth in that. But it turns out that the exploratory shaft itself is on the critical path to get the program done.

Senator BREAUX. Let's talk about the public hearings just a little bit. How much time are we going to give to the States to come in and comment? How many public hearings are being planned and where are they going to be held?

Mr. RUSCHE. The law requires that we hold a public hearing in the vicinity of the place where the site work is going to be done to discuss the Site Characterization Plan. Our experience to date with such things has suggested that in addition to a public hearing—that is, a place where we go listen to people—that it is valuable to have a briefing in which we attempt to describe to the interested parties what is there, to better equip them to respond. So for every hearing, we will have a briefing, more than likely, preceding.

The law requires us to have one. We have had discussion—in fact, last week in Nevada, we had discussions with the States and have had suggestions or recommendations that there be two or three or four, depending on the State and the circumstances at the time. And we will do our best to be responsive.

Senator BREAUX. Is that during the preparation of the plan or is that after the plan is finalized?

Mr. RUSCHE. It's after the plan has been put in—I hate to even use the word "final" because a plan is never final—it would be after the plan has been completed the first time. In the meantime, we will have provided drafts of the chapters of the plan as they are being prepared. We are providing those to the States and to the NRC for their comment along the way.

Senator BREAUX. Mr. Thompson, do you have any comments on behalf of the NRC with regard to the way the plans would be presented to the public for comment?

Mr. THOMPSON. Not necessarily on the way the plans are being presented to the public. What we are attempting to work on is to identify technical issues and have meetings on technical issues that are associated with key elements of the Site Characterization Plans and the methodologies that would be used to determine what data is needed to resolve the licensing issues. We anticipate, for our own review purposes, that it will take about six months or so for us to complete our review, and during that period of time we would anticipate, clearly, interacting with the host States and the affected tribes. Generally, I think that period of time should be adequate for us to complete our review provided we have the dialogue that's identified in the draft mission plans now that would be effective in holding discussions between the affected parties on various technical issues.

Senator BREAUX. Mr. Rusche, in your testimony you talked about the Multiattribute Utility Analysis System that was developed by the Department in order to narrow the sites down to the nine. You talked about how the methodology used to narrow it down to the nine sites was reviewed by the National Academy of Sciences and commented on by them, but you didn't tell us what their conclusions were. What were their conclusions?

Mr. RUSCHE. The Academy's Waste Board in this case, as they generally have done in much of the program, was confined to evaluating the technical adequacy of the methodology and the procedures and our use of that methodology. They did not evaluate the adequacy of the data that were used, nor did they validate or make their own judgment as to whether the answers that were achieved were right. And this is the way the Academy generally performs such functions, recognizing, of course, that the responsibility and prerogative for these final determinations rest with the executing agency, us. They nevertheless responded very pointedly as to the adequacy of the methodology. They thought it was an appropriate methodology for the purpose for which we were using it, and in particular that it was responsive to their earlier comments that were made in response to the draft environmental assessments that were published some 18 months earlier, and as they saw how we applied it, they concluded that our application approach was a right and proper approach.

Senator BREAUX. You use that to come up with your ranking of the nine sites. Could you give us the ranking that came out as a result of that methodology being applied?

Mr. RUSCHE. We did not rank all nine sites in that we attempted to apply the methodology to the reduction from the five nominees to the three selected sites. Indeed, I have those—let me see if I can put my finger on them right quick.

The order, when all factors were considered, listed the Yucca Mountain site, first; Richton Dome, Mississippi, second; the Deaf Smith site in Texas, third; Davis Canyon in Utah, fourth, and the Hanford site is fifth.

When the ranking or the ordering was looked at without costs considered, the order was Hanford first; Yucca Mountain, second; Deaf Smith, third; Richton Dome, fourth, and Davis Canyon, fifth. And the Secretary's decision methodology documenting the basis for his conclusion—using this information we elected to use the ordering—as a first order of preference, without the consideration of cost, because cost was primarily driven by geographic location and we concluded that since we were in the process of making a choice as to which sites to characterize that it was more appropriate to focus our attention on technical questions; cost is a very speculative matter at this stage of the evaluation, and that's what we did.

Senator BREAUX. One of the later witnesses will say that after the initial ranking of the nine or the selection of the nine was made, then at that time the diversity issue was thrown into the mix, and the geohydrologic settings and diversity of the rock types were then considered. Could you elaborate how that process was then brought in?

Mr. RUSCHE. Yes, if I can do it without being too detailed.

The Multiattribute Analysis aggregated the assessments of, I believe, over 100 factors in evaluating the relative attractiveness of these sites, attempting to put them in some sort of common framework. That's the nature of this kind of decision-aiding approach.

You will recall that both the Act and our siting guidelines suggest that we should, where the option permits itself, opt for maximum diversity in the geohydrologic setting and maximum diversity in geologic setting. It turns out that the five sites nominated all were in different geohydrologic settings, so the question of geohydrologic diversity was sort of a moot question amongst the five.

We used the decision-aiding analysis to obtain information and insight as to the relative preference of the sites, and I just gave you that ranking. It turns out that having chosen the course that we chose, that the three sites thus emerging—that is, Hanford, Yucca Mountain and Deaf Smith—also present maximum geologic diversity. They are in three different rock types. That factor was noted, and it certainly strengthened the view that this selection was a right and proper selection.

Senator BREAUX. Can you give us a little information on the status of the Department's effort to enter into consultation and cooperative agreements with the States and the various Indian tribes? What's the status of that process?

Mr. RUSCHE. The process continues. We have not yet reached agreement with any State or Indian Tribe. We were obligated to start such a process at the time we started site characterization, at the time the President selected the sites. Early on during the period of consideration before selection, the State of Washington had earlier elected to begin negotiations with us, as did several of the Indian tribes. We have not yet reached a conclusion on any of these sets of discussions, as I indicated. We are obligated each year to report to the Congress what the status of those discussions is, and I have a report that will be up again in the next couple of weeks which will describe our view of the status of those discussions, and each State's or Indian Tribe's impression of their own as to what that status is. The bottom line is that I believe we are in the process of continuing discussion with two of the Indian tribes, if I'm not mistaken. All three of the States are at a position—and they will speak for themselves, I am sure, after while—but I believe none of the States are at this point prepared to enter detailed negotiations. If they are, it would be news and I would be pleased to have that begin this afternoon.

Senator BREAUX. Mr. Thompson, in your testimony you had indicated that DOE had considered other factors outside of the NRC's regulatory responsibility, such as cost and schedule, in the overall ranking of the sites. Does NRC believe that this is permitted under the Nuclear Waste Policy Act?

Mr. THOMPSON. Yes, sir.

Senator BREAUX. Does that in any way undermine the Department's effort to be able to submit a satisfactory license application to the Commission?

Mr. THOMPSON. I don't believe so, Senator. It's an important area that we addressed, the 10 CFR Part 60 licensing issues. To the extent that DOE makes a final selection on which site they want to move forward on licensability, I think it's quite appropriate that they have the flexibility to consider cost and schedule. That's in accordance with the statute.

Our focus is on the health and safety issues, and I think that those are the ones that are important for NRC to focus on, so I don't see a conflict in that area right now.

Senator BREAUX. Can you give us any comment or your thoughts on the progress that's being made—you all had expressed some problems with the environmental assessments not covering some of the things that needed to be covered. I guess the hope is that the Site Characterization Plan would address those issues. Can all that be done and keep it on a schedule that we're trying to keep as far as it being on a timely basis?

Mr. THOMPSON. Well, the ability to meet schedules, I think, depends on two parts. One is the quality of the product that DOE is able to submit in the licensing framework. It is their ability to submit an application that adequately addresses the technical issues that we have identified. It is important that NRC identify to DOE the technical concerns and the licensing concerns that we see that they need to address.

We are seeing more progress being made in having technical discussions on these issues. We have on-site representatives at the Hanford site and in the Nevada site area by which we are able to maintain an effective dialogue and understand what issues are being addressed.

The ability, though, to meet the schedule really depends on DOE's ability to have an adequate quality assurance program, effective dialogue with the NRC, the affected States and the Indian tribes—all of these activities are important in being able to meet schedules. I think it would be very optimistic in our experience to date that all schedules that currently exist are going to be able to be met. I think that's probably an optimistic view.

Senator BREAUX. Can you give us, Mr. Rusche—I think Senator Simpson had mentioned it—a status on the current spent fuel that's being stored now? We've got some things that have to be done, and MRS is one of them, and I need some discussion. Suppose Congress doesn't get around to doing that? What happens? What are we facing?

Mr. RUSCHE. As of the moment, I believe we have about 14,000 metric tons of fuel stored in spent fuel basins around the country at over 100 reactors. Our estimate is that in 1998 there will be about 36,000 to 38,000 metric tons of spent fuel stored, and if we do not have the MRS in operation in 1998, as we have proposed in our proposal to the Congress, and are able to make the optimistic schedule of 2003 for the repository, we would have stored an additional 10,000 to 12,000 metric tons in that intervening five years.

The estimate for the total program generation for all the reactors now operating is about 75,000 to 80,000 metric tons. The projection of EIA, which is our source of such projections for the referenced case, is about 106,000 metric tons for the program.

I think Senator Simpson's comments are extremely relevant, that we are not sitting in a situation in which time is not an important factor. Obviously we and you and the country have to weigh how important it is and how much it is worth, but we are continuing to generate spent fuel. We have spent fuel. In addition, we have national defense waste, and we will continue to generate that and it will be disposed of in the repository, as well.

So I think that the very root question that we all face is whether we want to do something different from what we're doing now. And Congress said in 1982 that the time has come to get on with it and do it right, and I think that how we are doing it is the essence of all of the discussion that we are having.

Senator BREAUX. Senator Symms, do you have some questions?

OPENING STATEMENT OF HON. STEVE SYMMS, U.S. SENATOR FROM THE STATE OF IDAHO

Senator SYMMS. Thank you very much, Mr. Chairman.

Gentlemen, I welcome you here this morning. I just want to make a couple of comments and then I do have two or three questions I'd like to ask.

When the act was passed in 1982, I felt that it was a remarkable accomplishment in that it was a solution to a 30-year-old problem. Parochial concerns were put aside. Partisan things were put aside. Compromises were made. Senator Simpson and others of us who worked on the bill, I thought, laid down a plan that the United States would have a permanent waste repository facility ready by the year 2000 to handle spent fuel so that the storage of the spent fuel would not be a roadblock to moving forward with a nuclear energy solution to the potential of offshore oil holding us hostage.

It seems to me that we took the high road in arriving at a compromise to pass that legislation; five years later, the low road has been followed. Over 40 lawsuits have been filed. More have been threatened. There are charges and countercharges almost daily. Everyone in the country is making clear that no one wants any nuclear waste in their back yard or in their State. The Nuclear Waste Policy Act has become a political battlefield. It has pitted the east against the west, Democrats against Republicans. Individual States and Indian tribes have squared off against the Federal Government, and a lot of people who should be pointing the direction that our Nation should take to resolve the matter instead are pointing fingers at each other.

So I have to say that it's a disappointment to me that we're not able to get on top of this issue when we do have the technology. Anybody who will take the time to study the nuclear question and waste management and handling can tell you that we have the technology to safely store and handle nuclear waste. It's totally a political problem. We established guidelines for dealing with nuclear waste, but now all that waste is still sitting in pools in a lot of back yards all over the country. It's still there, but it's just not being managed in the way that we had intended that it would be.

So I believe we need to get back to this act and use it the way it was meant to be used. I want to compliment the Chairman for having this hearing because I think it gives us an opportunity to talk about getting a repository in place for permanent waste storage. To repeat, in my opinion we have the technical knowledge, and we've got to somehow continue with the intent of the 1982 act, and work this thing out for the good of the country.

Now, in line with that statement, Mr. Rusche, Secretary of Energy Herrington, when he presented the draft amendment to the mission plan to Congress earlier this year, stated that if Congress did not adopt the amended plan, DOE would fulfill the requirements of the Nuclear Waste Policy Act of 1982 as enacted. Now, is that still the Department's position?

Mr. RUSCHE. Yes, sir.

Senator SYMMS. If Congress does not accept the amended mission plan, will DOE be able to meet the time schedule laid out by the Nuclear Waste Policy Act?

Mr. RUSCHE. No, sir. We indicated that for the first repository, the very best effort that we think can be exerted would yield a repository in operation in 2003. In some people's minds that's even optimistic, considering the factors that have got to be addressed and resolved.

So to that extent I think that, the law notwithstanding, it would not be possible to have the repository in operation in 1998 as we had projected and the Act had projected.

With respect to the second repository, we concluded, as you heard Senator Breaux read in his opening statement, that it was important for us to make the Congress aware of our view that we did not need to proceed with the second repository on the time scale prescribed in the Act, but we recognize the obligation to try to do so. And that's primarily the genesis of the statement that you read with respect to Secretary Herrington. We have at the moment discontinued site-specific work for a second repository site. But if the Congress does not give us direction agreeing with the proposal in the draft Mission Plan amendment which will be formally before the Congress before this month is over, and the year ends, the Secretary has indicated—and I reiterate—we recognize the obligation to resume that site-specific work for a second repository and we intend to do it, if you provide the money. But that is a key factor.

Senator SYMMS. There have been charges made that each of the three sites chosen for the site characterization are "fatally flawed." Is there any way to determine if that is so without extensive site characterization?

Mr. RUSCHE. We have attempted to do that based on the available data, and it is our view that that is not a correct statement. In fact, it was our view that all nine of the sites that were identified as potentially acceptable sites were probably suitable for characterization. Certainly for the three selected, we believe that to be the case. The Secretary made a preliminary determination of suitability, as required by the Act, and it is our view that from a technical and scientific standpoint, each of those three sites is worth characterizing, and we believe all will be found suitable.

Senator SYMMS. But without drilling, can you actually make an analysis that they're fatally flawed?

Mr. RUSCHE. We cannot. We find no disqualifying factor. And if you recall the way the Act and the siting guidelines were constructed, the objective was to identify a set of disqualifying factors or features. If any were present, then one would not proceed with characterization. Our evaluation, based on data available, does not identify a disqualifying factor for any of the three sites that we propose to characterize. That's not the same thing as saying that all three of those sites are, at this moment, automatically and fully judged suitable. It's only through site characterization that we can make the determination of suitability, but we do not see now any basis for disqualifying those sites and believe it is both a sound technical investment and monetary investment to characterize those sites.

You might want to ask my colleague from the NRC whether they have found anything.

Senator SYMMS. Would you want to comment on that?

Mr. THOMPSON. I'd be glad to. We also looked, similarly, to identify any disqualifying factors, and we did not identify any, although I guess our view of the suitability or the likelihood of the sites that

DOE had selected was probably less optimistic than theirs. But generally, we believe that all sites that are in the site characterization program proposal right now, the three sites selected, are suitable for site characterization.

Senator SYMMS. Does the DOE plan to provide multiple layers of engineered barriers to increase the integrity of the geologic disposal site?

Mr. RUSCHE. Indeed.

Senator SYMMS. What types are being considered, and what is their purpose?

Mr. RUSCHE. First, we are obligated to comply with the NRC regulations, which provide for a multi-barrier system. The fuel starts out in its own form as a very effective barrier to release to the environment. Its cladding provides a second barrier. The package in which we put it, which would be a can, provides a further barrier. It will be emplaced in the geologic medium in what we would call an "overpack", which would generally be a kind of mineral or rock packing which would further retard the release of materials should it pass through any of the earlier barriers, and at that point it would then be dependent—or its transmission to the environment—would be dependent on the natural features of the geologic medium.

Senator SYMMS. Well, Mr. Thompson, has the NRC taken a position regarding the methodology that DOE has used on the site characterization?

Mr. THOMPSON. It is consistent with our regulations and we believe it is an appropriate one to look at the systematic approach, that is, how all systems function together to provide the protection to the public health and safety from any release that might occur.

Senator SYMMS. Do you think the cost estimates are reasonable?

Mr. THOMPSON. We have not really evaluated the cost estimates associated with their activities. We are looking only at the scientific data with respect to the licensability.

Senator SYMMS. So you think that the DOE activities plan for site characterization is reasonable in terms of the information required?

Mr. THOMPSON. To the extent that we know them today. They have not really submitted to us the detailed Site Characterization Plans, which are the key documents which we will have to review and comment on before the major exploratory shafts are sunk. We are working daily and weekly with DOE in identifying technical issues. We've seen early draft versions of some of the Site Characterization Plans, but we have not concluded that DOE Site Characterization Plans now adequately address all of the issues, and that's why we continue to work on them.

Senator SYMMS. In other words, you have reviewed the evidence presented by the States of Nevada, Washington, and Texas? Is that correct?

Mr. THOMPSON. We certainly are aware of their comments. They are very similar to many of the comments that we have on each of the sites.

Senator SYMMS. Well, what is your reaction to the evidence that those States have presented?

Mr. THOMPSON. Well, our position is that the issues are ones that need to be technically resolved for licensing, but they are not disqualifying factors for those sites at this time.

Senator SYMMS. Would you say that again, please?

Mr. THOMPSON. There are issues that need to be resolved prior to any licensing decision. They are not disqualifying factors at this time. They are types of issues that will probably need to be resolved through the detailed site characterization effort.

Senator SYMMS. If the Congress would reject the amended mission plan, do you believe the original Nuclear Waste Policy Act schedule can be met?

Mr. THOMPSON. Our participation in meeting that schedule is the three-year licensing program. Our comments on the draft mission plan indicate that a number of activities they've taken are going to be important—that DOE has identified as part of that draft mission plan are important in our being able to meet the 36-month licensing schedule. Our ability to do that depends on, first, the submission by DOE of the licensing document itself. If DOE is unable to do that, and I think Mr. Rusche just said he would not be able to meet the original schedule, there's no way we can shorten our licensing schedule to make up that time. So I would say we could not meet that schedule as originally proposed.

Senator SYMMS. Just as a point of curiosity on my part, we're talking about a permanent waste site that would house the waste indefinitely, is that not correct?

Mr. THOMPSON. Correct.

Senator SYMMS. How many years would you consider permanent? I mean, infinite?

Mr. THOMPSON. I would say without measure. We do not know how to measure it. "Permanent" means without further attention. I guess I would remark, we do have a 50-year period in which the waste could be removed from the site, but after that it would be considered a permanent-type situation.

Senator SYMMS. It's been about 500 years ago, since Columbus discovered the new world; and it seems to me that if we could build a building out here and stack it up and it would last 500 more years safely, that that should be able to ease a lot of the emotion. But somehow, it doesn't seem to work.

Mr. RUSCHE. May I react to that, Senator?

Senator SYMMS. Yes.

Mr. RUSCHE. There are lots of views to that effect. In fact, there's legislation that's been introduced by some of your colleagues to that effect, but the Act did not leave that as a matter of discretion or discussion for me or for any of the participants in the program. The Act selected the course of permanent disposal. And as a personal aside, I think that's the right course for the country.

Senator SYMMS. The permanent?

Mr. RUSCHE. Yes. I think the comment Mr. Thompson made, obviously, is relevant, and that is that both for licensing and regulatory reasons as well as for pragmatic reasons, we would not expect to close the repository and put it in this abandoned circumstance for at least 50 years after we have loaded it. And it may well be that in that 50 years our successors and our heirs will determine that the material is worthwhile; and if so, they can get at it. We will certainly leave it marked so that if others come along and decide that that resource is valuable, it can be recovered. But the objective is that we can't tell what kind of people they're going to be, what kind of institutions are going to exist, and the best that this generation can do to take care of its obligation, it seems to me, is to place that material in a circumstance so that our heirs will not have to be doing the same thing that we're doing with it today. So in that sense, I believe that the Congress acted very wisely.

Senator SYMMS. Do you feel comfortable and confident that this is all doable?

Mr. RUSCHE. Without a doubt—excuse me, from a technical standpoint.

Senator SYMMS. Mr. Thompson?

Mr. THOMPSON. Obviously we are a regulatory body and we are not quite as confident that it is. Obviously, we do believe that the current program, which has three sites identified for site characterization, will include at least one that would be licensable. I would not be prepared to say that all three of those sites are licensable.

Senator SYMMS. Thank you very much.

Thank you, Mr. Chairman.

Senator BREAUX. Just two quick questions, then I'll recognize Senator Reid.

I was interested in the Texas delegation's statement that's going to be presented. They talk about—and perhaps the other two States also have significant problems; I just haven't seen their testimony—but the Texas group of witnesses say that the site is underneath a very large aquifer. I'm certain that causes additional technical problems of constructing some type of shaft that has to go through a large aquifer in order to get to the repository site.

Out of all the sites that were considered it would seem that you could find one that wasn't sitting underneath an aquifer. Do you have any comments on that?

Mr. RUSCHE. There's no question that we found sites that didn't sit underneath at least this particular aquifer. Most salt sites sit underneath water-bearing strata of one sort or another. This particular one in Texas is certainly a very rich aquifer and one that's important to the agriculture and the welfare of the region. I don't want to sound glib or flip about it, but when you look at the number of holes that have been punched through aquifers in Texas to extract materials, you must come to the conclusion that there are ways to do it.

Now, there is no doubt but that the shaft that we are going to sink is larger than most of those holes. There is experience in the world in numerous cases in which aquifers of this intensity or this richness have been penetrated; shafts have been sealed, and materials are being excavated, either for mining or for other mineral purposes, so the engineering feat of placing a shaft through such an aquifer is not a very unusual task, if you talk to mining engineers. There is no question but that it must be done right and it must be done well, and if you have a reservation about the matter until it's dug, there's always a question in one's mind. But from a technical engineering standpoint, a mining standpoint, it is not an unusual feat. We believe it can be done and can be done safely.

Senator **Breaux**. Mr. Thompson, do you have any comments on that?

Mr. **Thompson**. Generally, I guess that we recognize that that particular issue is probably the key licensing issue at that site. It has been said that it is an engineering and technical issue that has been successfully done at other places; however, it is one of the key issues that would probably have to be evaluated as part of the Site Characterization Plan. That is, that's where you would actually have to sink the shaft to really know for sure what you're faced with at that time, and that's not one that you can do from the surface. So it is a key issue that is an appropriate one that needs to be reviewed.

Mr. **Rusche**. Could I just add one comment, Senator?

Senator **Breaux**. Certainly.

Mr. **Rusche**. I think that this is a good example of the kind of situation that is necessary to do before you can be sure. We think we have experience, but the course of characterization does not render the site unusable for other purposes. No radioactivity is involved in characterization. It's purely a mining operation, as it were. If we find that we are wrong, then the site will not be usable. It will not be licensable, as Mr. Thompson has said.

On the other hand, there's a body of salt under that place that appears to be a very attractive body of salt for the disposal of waste. Now, almost every place you go, we're going to find some water, particularly if we have sedimentary deposits—and eventually, salt—that are involved. And I think if a body were to take the view that no aquifers would be penetrated, then we would be reduced to a very few sites in this country. I think from a technical standpoint that is completely unwarranted. That we must demonstrate it is surely important.

Senator **Breaux**. Senator Reid?

Senator **Reid**. Thank you, Mr. Chairman. I hope I don't ask questions that have already been asked. I'll try to be as brief as possible.

Senator Johnston has introduced legislation that would, in effect, compensate a State or Indian tribe that would be willing to come forward and say that they would take the nuclear waste repository. Have you received any inquiries from Indian tribes and/or States expressing an interest in this concept of Senator Johnston's?

Mr. **Rusche**. Yes, sir.

Senator **Reid**. More than five?

Mr. **Rusche**. Yes, sir. Excuse me, maybe it's four and a half. I have to think to be sure. It's four or five, depending on how I evaluate them.

Senator **Reid**. In a hearing we had last month I noted that DOE denied Nevada funding for technical studies at the Yucca Mountain site in 1984. It's also my understanding, and I expressed it on the 23d, that the Ninth Circuit Court of Appeals affirmed the State's right to do such studies in December, 1985.

It's my understanding that the Department has now taken the position that the studies are not "scientifically justifiable." Could you give the subcommittee the status of this funding for Nevada's technical studies at this time?

Mr. Rusche. Senator Reid, I'm afraid I have to ask you to allow me to give you that in writing. That is a subject that's under discussion. I know it has been actively under discussion. I do know that that was a view that some of the folks took. I do not know where it is at the moment, and I'd be pleased to provide that in writing.

Senator Reid. And you'll do that within the next week?

Mr. Rusche. I will, indeed. In fact, I'll even try to give you a call today if you like, or tomorrow, or else get it to you in writing.

Senator Reid. That would be fine.

[The information requested follows:]

The 9th Circuit Court decision affirmed the oversight role of States and affected Indian Tribes and their right to conduct independent technical studies. The decision did not instruct the Department to fund the specific studies requested by Nevada in its 1985 grant application. The Court's decision was given in December 1985. At that time, the Department was negotiating the 1986 grant award with the State of Nevada. The Department awarded $4.418 million to Nevada for 1986, including all of the independent technical studies that Nevada and the Department agreed was appropriate for the State to undertake.

The Department is currently negotiating the 1987 grant award with the State of Nevada. The Department has already awarded about $8 million to Nevada in 1987, including over $5 million in independent technical studies. About $1.5 million for technical studies is still under review by the Department.

The Department has made every effort to ensure that the State of Nevada has adequate funding to undertake those independent technical studies necessary for the State to meet its oversight responsibilities as mandated in the Nuclear Waste Policy Act of 1982.

Senator Reid. What are DOE's concerns about initiatives underway to place a limited moratorium on site-specific activity at proposed nuclear repository sites?

Mr. Rusche. I think, Senator, the concerns would have to be measured in terms of what the act requires. DOE is not conducting the National Nuclear Waste Program as an initiative of the Department. We are attempting to carry out the act, and just as we proposed in the draft mission plan amendments, certain variations in schedule and content—if the Congress makes a determination that such a moratorium is appropriate, I think our role would be to tell you what the effect would be on the schedule, because in the end, that's the effect of the moratorium. It alters the schedule.

Now, presumably the purpose of the moratorium would be to try to make some additional changes, and I'm very hard pressed to comment on whether those would be easy, practical or doable without knowing the nature of them. But I think it's clear—I should be very clear that my charge, as I understand it, is to try to carry out the act. And if Congress, either through modification of the act or through appropriations actions, instructs us to do otherwise, then that will be my job.

Senator Reid. I have no further questions, Mr. Chairman.

Senator Breaux. One other follow-up question, Mr. Rusche. What percentage of the waste that we're accumulating belongs to or is generated by the Defense Department?

Mr. Rusche. Today, I think there must be 6,000 or 8,000 equivalent metric tons in existence——

Senator Breaux. Out of what total that we have?

Mr. Rusche. Today, thereabout 14,000 metric tons of civilian. At the end of the program we would expect the total amount to be about 10 percent, maybe as much as 12 percent of the total program, not counting the waste that's in the old tanks at Hanford.

Senator BREAUX. Is there a plan to get a contribution from DOE or Department of Defense to pay for that waste? Is it all thrown on the backs of the utilities, or what?

Mr. RUSCHE. Oh, no, sir. There is indeed a plan, but it will depend on the Congress to make the funds available. We identified the plan through a Notice of Inquiry about six or eight months, maybe ten months ago. We received a number of public comments and will publish the final procedure that we will use to make the estimate, and that estimate will first appear in the Department's 1989 budget request that will be coming to Congress next year.

The objective is to be sure, to the best of our ability, that we have developed an equitable and fair approach and that the Defense program pay its fair share on a pro rata, per mass basis.

Senator BREAUX. When can we expect the final mission plan to come up?

Mr. RUSCHE. It's about ready to go to the printer in the next week or 10 days. I had promised June on April 23, and we will certainly have it up in June.

Senator BREAUX. All right.

Okay, gentlemen. We thank you. We may have some other questions which we'll convey to you. Thank you for your appearance.

Mr. RUSCHE. Thank you, sir.

Mr. THOMPSON. Thank you.

Senator BREAUX. I'd like to welcome up our next panel, Mr. Terry Husseman, representing the State of Washington; Mr. Steve Frishman, representing the State of Texas, and Mr. Robert Loux, representing the State of Nevada.

Mr. Husseman, we have you listed first. If you would go ahead we'd be pleased to receive your testimony.

STATEMENT OF TERRY HUSSEMAN, DIRECTOR, OFFICE OF HIGH-LEVEL NUCLEAR WASTE MANAGEMENT, STATE OF WASHINGTON

Mr. HUSSEMAN. Thank you, Mr. Chairman.

I have provided the staff with copies of a statement by Governor Gardner. I would ask that that be, with your permission, made a permanent part of the record of the committee, and I'd like to basically summarize—read part of that and summarize some parts of it.

I'd like to thank the chairman and members of the subcommittee. We do appreciate the opportunity to present our perspective on the status of the repository program.

We believe that the repository program has reached a critical juncture. The site selection process is on the brink of collapse. DOE credibility is at an all-time low, and unless some action is taken soon, it is likely that the program will be brought to an abrupt halt by the courts. When that happens, it will result in conditions which will make it very difficult to put this program back together. We believe it would be wise to address the problems now rather than wait until we are in an absolute crisis situation.

It is important that you understand some of the reasons why we in the State of Washington are so adamant in our position that the site selection process must be brought to a halt, the May 28th decisions must be retracted, and the process must be restructured before this program goes forward. Our concerns cannot be brushed aside by attributing them to the NIMBY syndrome. Our concerns are real, and they are substantial.

We, along with almost everyone involved in this program, were shocked when on May 28th of last year DOE unilaterally and arbitrarily announced that the second round selection process had been "indefinitely postponed." This action is clearly in direct violation of the Nuclear Waste Policy Act. Mr. Rusche in his earlier testimony indicated several times how he feels compelled to follow the law. For some reason the Department, at least, did not feel compelled to follow the law as far as the second round issue is concerned.

In selecting Hanford as one of the three sites to be characterized, DOE ignored the results of the ranking methodology, which was reviewed and approved by the National Academy of Sciences. The Academy did not review nor approve the process by which DOE utilized the results of the methodology to select the three sites for characterization. The results of the ranking methodology indicate that Hanford is the most costly and the least safe of the five sites under consideration. Hanford ranks dead last in both the pre-closure and the post-closure considerations.

I'd like to just give you a feel for what we're faced with in the State of Washington. The Department of Energy, after a significant amount of pressure was applied, agreed to develop this ranking methodology. They hired nationally-respected consultants, including a Professor Keeney from the University of Southern California, to develop a methodology for comparison of the sites. They did develop the methodology, and then they had it reviewed by the National Academy of Sciences, who also retained nationally-respected decision analysts to review the work.

The methodology itself was, for the most part, given good ratings. It was described as an excellent methodology. Then the Department of Energy, after having been given basically an approval from the National Academy as to the methodology, proceeded to ignore the results of the methodology and select Hanford even though it's the number five-ranked site.

After the May 28th decision was announced, the consultants—Professor Keeney, who DOE hired to develop this methodology—went on the public record with his own analysis of how the ranking methodology should have been applied, and it was his opinion that there was no way Hanford should have been in the final three. In addition, Professor von Winterfeldt, who was hired by the National Academy to review the methodology, was so incensed after the May 28th decision that he wrote a letter to Mr. Rusche in which in his conclusion he stated that "the most important conclusion that I draw from the recommendation report's inclusion of the Hanford and Deaf Smith sites is that DOE is apparently willing to accept more health effects and an additional cost of$3.3 billion in return for several minor advantages of the two sites. As a decision analyst, I find these implications inconsistent with the methodology report. As a concerned member of the public and a taxpayer, I find them irresponsible."

Now, these two experts didn't have to go on the record. They were involved in the process and they felt compelled to get their position out into the public. They had no axe to grind; they weren't working for the States or tribes. They, in fact, had been retained by DOE and the National Academy. Basically they said there is no way Hanford could have been in the final three based on an application of the methodology report.

Now, how can we in the State of Washington possibly be expected to accept DOE's decision to select Hanford when the decision is totally contrary to the results of the methodology and, moreover, is criticized strongly and rejected publicly by DOEs own consultants who developed the methodology and NAS' decision consultants who independently reviewed the methodology.

It is very difficult to convince citizens in the State of Washington that this process has been run in a scientific manner when this kind of an approach has been taken.

We have many specific, serious technical concerns which we have briefly identified in our comments. I'd like to refer to one right now, and that is the issue of the ground water travel time test. The law requires that a site must be able to be demonstrated that the ground water travel time from the point of the repository to the accessible environment prior to waste emplacement is less than 1,000 years. We don't believe the Hanford site can meet that test. We said so in the draft EA. We said so at every opportunity where we could raise the issue.

The Nuclear Regulatory Commission retained a consultant to review the Department of Energy's work on that particular issue, and the NRC consultant came to the conclusion that there is a significant likelihood that the Hanford site cannot meet the 1,000 year ground water travel time test. Now, that is a fatal flaw that is grounds for disqualification, and we think that we are looking to pour $1 billion or more—probably substantially more--down a shaft at Hanford that will be a total waste of money, and the basis for the selection of Hanford is definitely not scientific. Just basically, the process should be ground to a halt at this point.

In a recent election 83 percent of the State's voters directed State officials to continue to take all possible steps to halt DOE's unlawful implementation of the process. The State has filed five lawsuits challenging DOE's actions. We believe our lawsuits have an excellent chance of succeeding, but it is senseless to wait for the conclusion of what could be a very long process of litigation before taking action to get the process onto the right track.

In recent months several new approaches have been proposed as solutions to the high-level waste disposal problem. The wide variety of seriously-suggested approaches is further evidence of the severity of the program's shortcomings. Some of these proposals are that, number one, we retract the May 28th decision, restructure and expand the site selection process, and restart at the point of writing the siting guidelines. Another one is that we remove DOE from the process, replace it with a new entity, and start over again. Another version is that we halt site characterization in Washington and Texas and characterize the site in Nevada. Others have suggested that we provide sufficient financial incentives to encourage a State or Indian tribe to volunteer a suitable site for characterization.

Others have recommended that we develop regional monitored retrievable storage facilities. It has been suggested that we forget about the repository, reprocess high-level nuclear waste, extract the reusable radionucleids, and dispose of the remaining on the ocean bottom.

And finally, some say we should just continue down the same path that we are on right now.

All of these approaches, as well as others which have been put forward, have been offered with sincerity that they encompass the best solution to the Nation's nuclear waste problem. Unfortunately, none of these proposals has gathered a broad enough constituency to begin approaching a consensus.

Our view of the situation in which we now find ourselves can be summed up as follows. There is unanimous agreement that we must solve the Nation's high-level waste disposal problem. There is widespread agreement that to continue down the current path is an approach which is likely to fail. Third, although there is a need for a mid-course correction, there is not agreement on the best answer to the question, where do we go from here?

And finally, until the various interested and involved parties can reach a consensus on the best answer to that question, the program will continue to stagger and will eventually collapse.

With these points in mind, in December of last year Governor Gardner recommended to the Department of Energy that it take the lead to establish a forum and process which could be utilized to develop a consensus answer to the question, where do we go from here? It was the Governor's opinion that if DOE were willing to acknowledge the need to consider changes to the process and were willing to support and participate enthusiastically in consensus-building, its own credibility would be enhanced and there would be a good possibility that positive results could be achieved.

DOE has turned down this recommended course of action. In doing so, DOE stated that the Congress is the appropriate national forum to resolve the controversial issues surrounding the repository site selection process. We are now in agreement with that stated position of the Department of Energy. If DOE is unwilling or unable to take the lead in attempting to develop an acceptable solution to the serious problems with which we are confronted as a result of their flawed implementation of the act, then the responsibility must shift back to Congress.

When Congress passed the act it was generally agreed that it would establish an effective and workable means to solve the Nation's high-level nuclear waste disposal problem. In our opinion the act did contain all of the necessary elements to solve the problem if it had been properly implemented. However, the seriously flawed implementation of the act has resulted in the current situation, which now requires that the Congress give serious consideration to a mid-course correction.

We must first take the time to reach an agreed, well thought out solution to the complex situation in which we find ourselves. There are several questions that we thought we had answered four years ago that once again are up in the air and must be resolved before we can proceed.

First, what is the most effective solution to the utilities' short-term spent fuel storage problem? We've had numerous suggested solutions to that problem.

Is there a need for two repositories? And if so, what is the appropriate timing as to the second repository?

Finally, what are the necessary elements of the site selection process that will provide confidence that the search will be for the best site, and that selection decisions will be based on credible scientific evidence?

These issues are all interrelated. You can't resolve one without resolving the rest. They must be resolved as a package.

There are no quick fixes which can restore credibility to the current process. In order to assess effectively the existing situation and make an informed decision on the best course of action, Governor Gardner has urged this subcommittee and the Congress as a whole to consider the following approach.

Bring the site-specific activities to an immediate halt.

Establish a forum and a deliberative process designed to bring together representatives of all the interests with a common goal of developing a consensus recommendation to Congress in answer to the question, where do we go from here?

And finally, implement those recommendations with the appropriate amendments to the Nuclear Waste Policy Act and restart the process.

The goal of the act is to site, construct and operate a repository which will contain high-level waste from the environment for the next 10,000 years. We are seeking to protect 400 generations of humans from the potential dangers of waste produced by three generations. If we can reach a consensus on an acceptable and workable solution to the nuclear utilities' short-term problem, we should not be overly concerned that we must also restructure and restart the repository site selection process in order to instill confidence that it will ultimately succeed.

Thank you for the opportunity to provide these comments. I am ready to respond to questions.

Senator Breaux. Thank you.

Mr. Frishman?

STATEMENT OF STEVE FRISHMAN, DIRECTOR, TEXAS NUCLEAR WASTE PROGRAMS OFFICE, AUSTIN, TX

Mr. Frishman. Thank you, Mr. Chairman. My name is Steve Frishman. I am Director of the Texas Nuclear Waste Programs Office. Governor Clements appreciates your invitation to appear before this subcommittee and regrets that he is not able to. We have provided Governor Clements' statement for the record. As I note, you have been reading it already and we appreciate that.

What I would like to do is briefly summarize that testimony that we have submitted for Governor Clements and then discuss a few other issues that are before the Congress now or will be shortly, such as the mission plan and the budget proposal.

The State of Texas has been active in the radioactive waste disposal program since about 1977, and we have been participating at various levels in trying to find effective and acceptable ways to manage and dispose of these high-level wastes. We recognize the need to serve the national purpose, of managing and disposing of these wastes in a safe and acceptable and timely manner, but regrettably Governor Clements has found that he has very little confidence in that goal being reached through the current implementation of the Nuclear Waste Policy Act.

Governor Clements and the State of Texas, as you have heard before, support the concept that has been discussed here already today of bringing the site-specific work of the program to a halt, including planning, including land acquisition; having the Congress take a level of interest that we feel is certainly necessary at this point in appointing a commission to review the overall program and report back recommendations on how this program may, in fact, be put in line and move in a timely way towards meeting the necessary goal that we have in this country. If there is anyplace that I agree with Mr. Rusche, I agree that we do have a responsibility to at least move our Nation towards an ultimate disposal program. We in our generation are largely responsible for this problem; I think we have a definite responsibility to move towards its solution, but to do it in a very sure, technically sound and fair way.

Some of the issues and concerns that have led us to the position that we feel that the program must be halted at this point have to do with some of the technical issues that were discussed earlier today. One in particular concerns the ability to seal shafts through the very valuable aquifers of the Texas Panhandle in a way that assures that the ground water that is used solely for irrigation and public consumption—it is the sole source of water in that area—that that ground water not become contaminated either by site characterization activities, which could lead to salt contamination of that water, or by repository activities that could ultimately lead to salt contamination and/or radioactive materials entering that aquifer.

The ability to seal such shafts, according to the construction method and design that is now being developed by the Department of Energy, is certainly not a sure thing. We have reviewed the construction method. We have been involved in the engineering reviews of Title 1 and now up to about 30 percent of Title 2 of the exploratory shaft facility design. We in no way are convinced that, first of all, it will be possible to have a watertight shaft. We also are not convinced that the shaft sealing is capable of assuring that there will not be transmission of ground waters from one level to another; and there is a possibility of carrying contamination between levels of ground water.

We also note that the shaft sealing, from the construction standpoint, has been completely removed from the question of the ability to seal those shafts should they become part of a repository and contain a repository seal, which would have to be a waste containment seal, as well. There are two separate tracks of design going on, and the insistence at this point is just that the site characterization facility can be sealed. The history of that type of construction project in North America indicates that roughly 40 percent of those shafts do not succeed as designed, meaning that they leak badly or catastrophically.

We also speak to a question of licensability. Mr. Thompson indicated that there is a 50-year—from first emplacement—retrieval requirement for a repository. We have developed data from samples that have been collected in the Palo Duro Basin and also reviewed activities and studies that have been carried out at the waste isolation pilot project in New Mexico, and our conclusion is that it is highly unlikely that the retrievability requirement of 10 CFR 60 can be met. Creep will be very rapid; at the Wipp site, creep has gone roughly 300 to 400 percent faster than was anticipated by the calculations prior to construction. We don't believe that it is possible to meet the requirement of retrievability and the accompanying requirement in 10 CFR 60 of designing the facility to retain the option of retrievability. All appearances are that retaining the option of retrievability in the case of the Deaf Smith site will be "backfill and mine it back out" if necessary. This loses one of the real values of the retrievability requirement, which is the ability to monitor post-emplacement performance of the repository. So the retrievability issue, we feel, is a very important licensing issue that has not been adequately dealt with and the available information, what little there is, has not been conservatively applied in interpretation.

We have the ongoing issue of the Department of Energy moving into the Texas Panhandle at this point, where some two years ago we began raising questions, and so did various local governments, of the impacts of the Department moving a work force into the area for site characterization. At that time the Department indicated to local officials and to us that if there were socioeconomic impacts to public facilities and public budgets, that these would be taken care of. Well, as you see from our prepared testimony, this is far from the case. The Department has determined, and has announced to us and to local governments, that they don't find the authority in the Nuclear Waste Policy Act to mitigate socioeconomic impacts of site characterization. This transfers the burden to the taxpayers. We don't believe that the Nuclear Waste Policy Act intended for the taxpayers to bear the burden of the site characterization or the repository program. We believe that the Congress intended that the Waste Fund carry that, as the benefits accrue to the users of the electricity who are paying the fee.

We have written, approximately 45 days ago, to Mr. Rusche requesting that the unplanned or unanticipated move into the Deaf Smith County site area—I say unanticipated because its impacts or the number of people was never analyzed in the environmental assessment—we've requested that that unanticipated move be postponed until this issue of impacts of site characterization is resolved. The Department has suggested, and we think there may be some need for it, that the only way we're going to do that may be through a line item in appropriation should the program go forward, although at this point this would not be necessary should our suggestion be accepted for a period of time where there are no site-specific activities, and therefore no reason for the Department of Energy to be housing itself in the Texas Panhandle.

We have yet to receive a response to that letter. During the course of the time that we have been waiting for such a response, the Department has continued to move people in at a rapid pace and plans to continue doing that. We're waiting to see whether we get a response before the full complement of people is in place, and then a response is essentially unnecessary.

I would like to just briefly mention the confusion that exists regarding the Mission Plan and the budget proposal. I don't want to further confuse it, but I would like to point out that it's difficult for me and I'm sure it's very difficult for you to figure out just what it is that the Department is proposing.

The Administration proposal for a budget is $500 million. There is no plan available for a $500 million fiscal year 1988 program. In the Mission Plan Amendment draft, the Department has laid out a budget proposal of $725 million which it says it must receive in order to carry out the rest of the program proposed in that amendment.

Well, now, there are some other things going on, too. We are at this point led to believe that the final amendment, which I believe Mr. Rusche has committed to delivering to you this month, is very similar to the draft. From interpreting what the Secretary has said, it appears that there will also be some exploration of restarting the second repository program.

If you look at what we have been told is the fiscal year 1988 cost of doing that, approximately $60 million, which does not appear in the $725 million, and then if you look at another plan which the Department is right now carrying out, which is to change in a major way its overall integration and contractor management of this program using a systems engineering and design contractor, right now costing what we have been told is roughly $35 million for fiscal year 1988. Add those two together and you're looking at $725 million plus another $95 million, which comes to an $820 million program which, the way the Department has described it, must be there in order for the proposed 2003 and 1998 waste acceptance schedules to be met.

Now, my question is, what is the budget proposal? And what will happen if the program is not funded at $820 million? So it's a very confusing issue. It seems to me that the Department in its budget proposal has indicated that there are some serious issues which must be resolved before it will provide a budget amendment for the difference between $500 million and $725 million. We don't see how those can be resolved within, essentially, this fogged program and fogged budget. We would be glad to assist you or carry out on our own some way to find out what the Department's planned and projected program for 1988 and budget really is so that as the Act requires in the Mission Plan, informed decisions may be made about the progress of the program.

Thank you. I am available to answer your questions.

Senator Breaux. Thank you.

Mr. Loux.

STATEMENT OF ROBERT LOUX, DIRECTOR, AGENCY FOR NUCLEAR PROJECTS, CARSON CITY, NV

Mr. Loux. Thank you, Mr. Chairman. I am Bob Loux, Director of the State of Nevada's Agency for Nuclear Projects. Governor Bryan has asked me to express his appreciation for your holding this hearing and he conveys his regrets on his inability to be here today due to our legislative session.

I guess at the risk of sounding somewhat redundant with the other testimony you have heard, I think we all believe without question that it's time for your committee and Congress in general to address this program's problems. Nevada and the other States and the Indian tribes have firmly concluded that the present DOE program is beyond repair, and that any repository site proposed under this current program can never be accepted by that public.

Nevada's concerns over DOE's misguided implementation of the act I think have been fairly extensively documented from the outset of the program in Congressional testimony, detailed comments in administrative proceedings, and costly litigation that we have been forced to file as a result of DOE's improper implementation of the act. Rather than going through a litany of what those concerns are—and I believe that many of them are attached to my current testimony—I would like to focus on two or three main issues.

First of all, I think it is important for you to understand that the State and tribal concerns are very unique and that they principally revolve around two issues. One is scientific and one is procedural.

In the scientific area we have all raised numerous legitimate scientific and technical questions about the viability and safety of the sites and the questionable methods that DOE has used to analyze and collect the data regarding that site selection. You heard this morning that the NRC's comments suggested that DOE generally disregards data if it's overly negative about the sites and gives overly optimistic and biased interpretations about that data that they do have.

There has been an inadequate, if not defective, quality assurance program at the minimum at the two Federal sites, making what little data there has been of questionable value.

Nevada certainly feels that based on conservative technical assumptions, the worst case about the existing data—not only the data that we have, but the Department of Energy—and under DOE's own siting guidelines there are at least five qualifying conditions likely present at Yucca Mountain right now related principally to faulting, geohydrology, volcanic activity, impacts from water degradation, and lastly and perhaps most importantly, conflict with the nuclear weapons program that exists at the Nevada test site. That latter category—I might add that there are really two conflicts that we see there. One is the documented effect of the degradation of Yucca Mountain structurally as the result of weapons shots some 30 miles from the site, and the feeling that as more real estate in the Nevada test site gets used up that those shots can only come closer to Yucca Mountain.

And of course, lastly, an institutional conflict exists regarding the activities for the Nevada test site and southern Nevada in general.

Thirdly, Mr. Chairman, DOE has flatly refused to establish an environmental baseline at Yucca Mountain prior to site characterization, believing that their own professional judgments about what that environment is and how it could be corrected or reclaimed should site characterization prove the site unsuitable, should be sufficient. The State has a different view of that and subsequently requested funding to conduct this environmental baseline work ourselves. That request is still pending.

As I mentioned at the outset, the bulk of our technical concerns are contained in the written statement and certainly can be expanded upon at your request. But in short, we have not seen an effective problem-solving strategy by the Department of Energy; to the contrary, they appear to want to avoid examination of these key critical site suitability issues as long as possible in the siting process for a variety of reasons.

Secondly, the procedural area is as important as the technical area. The siting process, we all believe, has been flawed from the outset, primarily as a result of the siting guidelines. The siting guidelines allow the Department of Energy's predetermined choices to continue into the sweepstakes. They presume and carry a presumption that all sites in this Nation are qualified until the evidence shows that they are not qualified, and so combined with the other element in the guidelines that very little data need be collected early in the site selection process, it is legitimate to assume that nearly any site in this country under the current siting guidelines would be found suitable.

The guidelines are overly subjective. They are vague. They are subject to a number of interpretations. We believe they were promulgated illegally. And lastly, and perhaps most importantly, they were politically motivated.

We equally as well believe that the environmental assessments are deficient from a legal standpoint under the Nuclear Waste Policy Act and believe, as well, that the ranking methodology has been employed improperly; but the guidelines, in our estimation, are the key cornerstone of this entire program and are the root cause of the principal problems with it.

Secondly, the Department of Energy still will not fund, as Senator Reid pointed out earlier, our legitimate technical studies. These studies are aimed at finding out answers to key site suitability issues at Yucca Mountain. They were originally proposed to the Department of Energy in May, 1984 and rejected. As you know, they were subjected to judicial review which upheld the State's rights to conduct those studies. Some three years later now, Mr. Chairman, we are engaged in a dialogue with the Department of Energy over minute definitions of scientifically-justifiable, competent contractors and the like, and it's my estimation that those issues, at least in the Department's mind, are going to have to get resolved before funding will come forward.

But even if our scientific and technical concerns could be resolved, it's critical to understand, Mr. Chairman, that no State or Indian tribe under the current program could accept hosting of the repository. The confidence level by the public and others in the State is at an all-time low and my guess is that they would, in fact, reject any repository proposed under this current program.

As I think many of my colleagues have pointed out, we don't believe at this point that there's any real quick fix to this program. The problems are so fundamental and so flawed that any selection, again, under this process could never be found acceptable to any of the States.

What are your options and what are the options for the country? We have pointed out in our testimony and in the appendix to it that there are three or four, perhaps as many as five, options that might be considered.

The first one is to do nothing, and I generally agree with my colleagues that there seems to be widespread agreement that the current program is faulty, will not produce a repository site, and is likely to fail. The primary problem has been DOE's implementation of the act.

Secondly, we have looked at alternative siting processes that have been proposed by various Members, principally Senator Johnston's bill. You just simply cannot buy public health and safety or public confidence and trust, and in our estimation that's one of the principal failings of the program, especially if the public—as they do in Nevada— believe that they're being railroaded. There has been very little in the way of a look at when that compensation ought to be provided, other than when the States have testified, and it's our view that the compensation is an appropriate issue for any State or Indian tribe that ends up hosting either a repository or a monitored retrievable storage facility. But the time for that compensation is after those sites are found fully suitable.

The third thing has generally been looked at as "scrapping the act" in terms of your options, and I guess as we've testified and still believe, the act is basically sound and creates a fair and viable process for finding a solution to the Nation's nuclear waste problem. Again, improper implementation has been the key to its failure to date.

Four and five are really the ones that we think are probably the most viable options for you to consider. The first one is, retain the act but do some fine tuning relative to the schedule and some of the other details that need to be looked at. And five, should Congress feel the need and feel that because of the costs of the programs and the problems are so great, that there may be a need to shift from emphasis on a geologic repository to an interim surface storage facility.

Again, I'm not in a position to comment, necessarily, in detail about any of those latter two options, but it seems to us that those latter two are the only real viable ones in terms of getting this program back on track, as you indicated from the outset, Mr. Chairman. In either case, the site-specific moratorium on work in the first round, second round and the MRS are absolutely essential. In other words, we don't believe that any effective dialogue about how to correct the problems with the program can be carried out while the program is steamrolling at the three sites.

Mr. Chairman and Members, I hope that the testimony has helped clarify why we've concluded that no State can ever accept a site under DOE's current repository program. The program's defects are so fundamental they cannot be corrected without rolling back many of their key decisions and actions. To participate effectively in the development of options and in the review of possible amendments that may be necessary, a moratorium—as I mentioned—on any further site-specific work, including land acquisition at the first round sites, is essential.

During the past year, Mr. Chairman, DOE has given new meaning to the term, "doublespeak." The approach DOE has taken with the draft mission plan amendment; the ambiguous, distorted and perhaps even dishonest budget proposals that they have made; and their announcement regarding the establishment of a major integrator contractor to manage the technical aspects of site characterization—which, as I understand it, will take in excess of two years to get in place—make it abundantly clear that perhaps even the Department of Energy itself is not ready to proceed with this program.

The moratorium will give Congress and the affected parties time to step in and deal with this critical program's pressing problems. Nevada is ready to work with Congress, the utilities in the second round, States and other interested parties in a cooperative good faith manner to address the concerns before additional hundreds of millions of dollars of the ratepayers' dollars are wasted.

I thank you for your time, and I would be pleased to answer any questions.

Senator **Breaux**. Thank you, gentlemen, for all of your statements.

Do you think that there would ever be a process that would be used and followed which recommended one of your States as a potential site, and your State would be satisfied with it?

Mr. **Loux**. I would be happy to try to address that.

It seems to me, as I have outlined, there are two key, critical issues here. One is in the technical or scientific community, that the sites that have to be looked at have to be examined in a very meticulous, very thought-out, well-directed, technically-sound program in terms of evaluating their site suitability, and that, in our estimation, is not occurring under the current program.

And secondly again, and perhaps even more importantly, is that the public and the citizens of that State have to feel as if they have been treated fairly, equitably, been compared with other sites in the country, and that a process as laid out, for instance, in the Nuclear Waste Policy Act, has been followed meticulously. In fact, if anything, it needs to be more redundant than it has been in the past without the sort of corner-cutting on many issues that we've seen the Department of Energy engage in.

But in my estimation, Mr. Chairman, if those two principles—and I think the act clearly lays those out—are followed to the letter, it would be very difficult for a citizenry or an elected body of a State to not be willing, in some cases, to host the repository, assuming that the other issues could be addressed, such as impacts—in our case—on tourism, economic development, and the rest. But it seems to me that that's the primary cornerstone, is those two issues, superior technical quality and impeccably following a process that has been laid out by the Congress.

Senator **Breaux**. You used the words in the testimony about "steamrolling" the approach. They had a lot of potential sites. They did environmental assessments on all of them, then they used multiattribute utility analysis of the sites nominated. That methodology was looked at by the National Academy of Sciences, and according to Mr. Rusche, they said that the methodology used in applying the standards was appropriate and proper.

We're going to do Site Characterization Plans. It's going to take 5 to 7 years to put that together, then it's going to be narrowed down to one site and an application is going to be filed. I don't understand how somebody can say it's being "steamrolled" through. It looks like it's taking forever; we're talking about something that's going to be here for 10,000 years, supposedly, and it ought to take a long time. But it is taking a long time, and I don't understand the characterization of it as being "steamrolled" in. I don't think that's a fair characterization of the time that's being taken to look at these things.

Mr. **Loux**. Well, perhaps "steamroller" in the sense of time is relative, I suspect, but steamrolled in the sense of the fairness with which individual sites or States have been treated in this process, is what I think we've been referring to. For example, as you well know, at the beginning of this program nine sites were under consideration, seven of which were in a salt medium of one particular form or another, with only one volcanic site and one basalt site ever identified. The two sites, the basalt site in Washington and the site in Nevada, drew byes, if you would, in this elimination tournament. They were never compared against another site in this process until this moment, notwithstanding the fact that the seven salt sites, at least in some manner—we might question the effectiveness of the comparison—were at least compared and contrasted against each other, and some evaluation took place. But the Washington site and the Nevada site have never been compared against any other sites since there are no other volcanic or basalt sites. So in the sense of steamrolling, I think the publics in our two States, and in Nevada in particular, feel as if we have been sort of steamrolled or railroaded from square one.

Senator **Breaux**. Mr. Frishman, with regard to Texas, Mr. Rusche, when I asked him about the site being under an aquifer, said you folks in Texas have been punching holes through aquifers for years, and you do it every day and you'll be doing it tomorrow and it's not a problem. How do you respond to that?

Mr. **Frishman**. I'm sure you're familiar with the attention that is paid in oil and gas drilling to casings, liners, cementing requirements, and so on. Yes, we drill a lot of holes in Texas, and in the Palo Dura Basin, which is the northern part of the southern high plains, where there have been approximately 1,100 oil and gas exploration holes drilled. They've been drilled according to the standards of the appropriate State agencies to meet requirements that ground water not intermingle between formations, and the casings have retained integrity for a long time. When holes are plugged, they are plugged in such a way as to not become lines of communication for ground water.

The shaft situation, as we see it, is quite different. The Department, or the engineers working for the Department, say the technology exists to seal essentially equivalent to these maximum—maybe 13-inch or 14-inch—oil and gas exploration holes, while in fact it's a new technology. It's a technology about which the sealing approach the Department has been talking about recently is one that we don't know works. It also is a much larger job, has many, many different considerations regarding sealing from an oil and gas exploration hole. There are also seals described in some of the current engineering plans, that half of the technical community says are cosmetic; the other half says are necessary. It is essentially an untried technology.

Senator BREAUX. Well, isn't that the point, that the Site Characterization Plan would include the drilling of an exploratory shaft that would be tested to see if the methodology they're saying would work would in fact work? And shouldn't it be allowed to be continued to at least be tested?

Mr. FRISHMAN. One of the points that we make is that there is no site-specific geotechnical data for that site. The Department cannot show that there is even a sufficient thickness of salt at the repository horizon that does not have clay or anhydride interbeds. Our point is that the site characterization effort itself is risky to the ground water because of cross contamination possibilities; because salt will be brought to the surface, and the Department has yet to say what it will do with that salt to keep it from contaminating. Our general point is that site characterization is an unnecessary activity at that site if you don't have pretty high assurance that this is a necessary place to be looking for high-level waste disposal, even though it is in conflict with the major economic program that is going on in that area, which is some of the highest agricultural production in the Nation, in the world. We don't understand why it is necessary to risk the water and to risk the economy when the Department has absolutely no certainty that this site is even very attractive or licensable.

Senator BREAUX. Have your States started receiving the draft chapters of the SCP's?

Mr. HUSSEMAN. We have received the first five chapters. The key chapter is Chapter 8; we haven't received any of that. We understand that they are on a schedule, and we will receive the final draft in about October. It's estimated to be about 10,000 pages and to have approximately 2,000 references. They are proposing to give us 90 days to review that document, to have public hearings that we want to have—our own public hearings—to review the document, have public hearings, and get comments back to them.

Now, this is absolutely impossible. We've asked them repeatedly for additional time to do at least—you know, we have technical people. We have contractors. They have hundreds of people spending thousands of hours on this, and they are going to rush us through a 90-day process in the middle of Christmas and New Years and Thanksgiving and expect us to get public input into that. This is another example of what they call consultation and cooperation.

Senator BREAUX. Mr. Loux, is Nevada getting theirs?

Mr. LOUX. We've received early draft chapters of this. At this point I think we have the same concerns that Mr. Husseman has identified, not only from ourselves, but it's inconceivable to me that members of the public who aren't generally involved in this program on a day to day basis who probably have some valuable contributions to make wouldn't be given the same time frame to make those comments. I think it's highly unlikely that they can really effectively participate in 90 days.

Senator **Breaux**. Mr. Frishman?

Mr. **Frishman**. The salt program is on a slightly later track than the other two. We have received no draft chapters yet. We have received one document of about 1,000 pages or a little more that indicates how the salt program intends to write its Site Characterization Plan, and we've been looking at that.

Senator **Breaux**. How much time would you need to review the documents? I'm trying to get some parameters in here.

Mr. **Frishman**. Well, I think you heard Mr. Thompson say that it was the NRC's conclusion that it will take about 6 months to review the SCP. In fact, the NRC has, I think, maybe graciously agreed to review the exploratory shaft part first, within 90 days, so that the Department can move on into beginning the process of constructing a shaft so that they can meet the statutory requirement. But he indicated 180 days for review of the SCP. Once the SCP comes out a revision is due in 180 days based on comments and based on new plans; so really, even the comments—if it takes 180 days for the comments of the NRC, other than for the exploratory shaft, can't even get incorporated into the first update. It will be a year after the Site Characterization Plan is issued that the NRC's comments, other than the exploratory shaft comments, even get into the plan. That's 180 days for the NRC, when they have much greater resources than the States, and also when they have had much closer contact with the development of the SCP than we have.

Senator **Breaux**. Mr. Husseman, how many days for your State?

Mr. **Husseman**. We've asked for six months.

Senator **Breaux**. Mr. Loux?

Mr. **Loux**. Similarly.

Senator **Breaux**. Senator Reid?

Senator **Reid**. Would you, Mr. Loux, briefly indicate to the subcommittee the problems that the State of Nevada has had obtaining funds to do the technical studies that are required under the law?

Mr. **Loux**. Well, Senator Reid, it has essentially started from the beginning and early on in the program as we began to gear up for various aspects of reviewing DOE's program. We saw and identified early on five or six key critical issue areas that needed to have some resolution before we'd know the likelihood of suitability of Yucca Mountain for a repository. We had not seen a lot of progress being made in the Department of Energy's program in those areas, and therefore we proposed to the Department of Energy in May, 1984 to conduct a series of independent technical investigations into those same key critical suitability issues that I mentioned earlier—faulting, volcanic activity, and the like. We were denied funding at that point in time and told that, in fact, it was not the State's business to be conducting an independent study, that that was not the interpretation of participation under the Nuclear Waste Policy Act.

We subsequently had several meetings with the Department of Energy and, as you recall, we called on the entire Congressional delegation, who jointly wrote a letter to the Secretary supporting the State's position and asking for some relief. And you all were rejected, as well as the State was, directly.

And so in December of 1984 the State filed litigation in the Ninth Circuit in San Francisco on this very issue. We argued the merits of the case in August, 1985, and the court rendered the decision in December, 1985 supporting the State's rights to conduct these studies as long as they are generally scientifically justified, that generally the contractors are competent, and that generally they don't interfere with any of the DOE's ongoing actions. That was in December, 1985.

We negotiated through most of 1986 in attempting to get some of those funds. We were literally sandbagged, if you would, with the Department officials meeting with us, taunting us about the fact that they were going to make us wait until the site was selected in late May for characterization because they couldn't afford to have us conducting these technical studies in advance of being designated for characterization.

We resubmitted our grant application late last summer or early last fall for funding on January 1. We received partial funding in February of this year, and we've received a trickle of funds relative to these technical studies. But the funds to investigate the five key suitability issues that we have raised, that the NRC has raised, and in fact that the National Academy of Sciences raised with DOE in 1979—we still do not have those funds at this time today.

Senator Reid. Mr. Loux, holding back these funds as they have done for years now, doesn't it also put the State at a tremendous disadvantage? Even if you got the money now, the studies take literally years to conduct in some instances. Is that not right?

Mr. Loux. That's absolutely correct. Obviously, the more years of data the better, but we think that in at least two or three of the areas a minimum of five or six years is essential for us to get a handle on these issues.

Senator Reid. Is it any different with the negotiations that the State has had with the DOE concerning consultation and cooperative agreements?

Mr. Loux. We have been invited, in one instance, to sit down collectively with the other States and try to talk about C&C agreements with the Department of Energy, and we indicated that we thought discussions at that time not only were premature, but ought to be done on an individual basis. In November of last year the Governor was sent a letter by the Secretary inviting him also for these discussions. The Governor indicated to him that until the issues such as the environmental assessments, the siting guidelines, the preliminary determination of suitability and the like were resolved, either by DOE, the courts or Congress, that he could not in good faith negotiate the balance of the program since we think that fundamentally the program, from square one, has been not followed in keeping with the act.

He also indicated at that time that our problems with funding of our studies and our ongoing grant relationship even compounded that situation to the point where it would be very difficult, if not impossible, for us at this point in time to sit down and talk about those issues. However, he did indicate that if the Department of Energy is willing to negotiate on the siting guidelines, on the environmental assessments and those other issues, that he would be willing to sit and talk with them.

Senator REID. Mr. Chairman, I would just state in closing that we have here an unbelievable situation. We have the one site that has been selected within a few miles of the great Columbia River; we have another site that has been selected in one of the two or three richest agricultural areas in the world, and we have the next site that has been selected in a place that atomic and hydrogen weapons are set off on a periodic basis, which has certainly destabilized that area. To think that these are the only three areas that could be found to meet the requirements under the act is incredible. And based upon the actions of the DOE that we have dealt with in the State of Nevada, it makes it unbelievable, especially since they've kept the State of Nevada from conducting their own scientific studies.

So again, these hearings are very timely and I appreciate the staff having done the good job they have in arranging the panels of witnesses.

Senator BREAUX. Thank you very much, Senator, for your contribution.

Now, let me ask Mr. Husseman. You pointed out in your statement that you had an election in Washington, and I think 83 percent of the people are directing the State officials to do everything they could to stop the DOE program on the waste repository. Doesn't Hanford have an awful lot of nuclear waste that's already currently sitting there, waiting for some day to find a place for it to go to? How do they feel about what's happening in all these States where we have 100 or so nuclear reactors piling up the nuclear waste on the sites.

Mr. HUSSEMAN. Yes, we have a lot of waste, Defense waste sitting at Hanford, 53 million gallons sitting in tanks. And yes, we're very interested in a repository being located, constructed, licensed and operated. However, the vote of the people—the wording of the initiative was directed at the means in which DOE has implemented this process. We've been treated in such a way that there is no way that the citizens of the State of Washington would be able to accept a repository at Hanford.

Senator BREAUX. Hasn't this planning process been done with a great deal more detail than the process that was used to allow the 55 million gallons to be there in the first place? I mean, isn't this in a lot more detail?

Mr. HUSSEMAN. That was done without anyone knowing it was going on when it started to happen. But the planning process that is going on now—you described the EA's, the multiattribute analysis, and if I understand your understanding of the NAS review, the NAS did not approve or bless the selection that DOE made.

Senator BREAUX. Well, I don't think anyone said that. It's just that they looked at whether this process was an acceptable process which would lead to a decision, whatever the decision was, and the word coming back was that yes, it was.

Mr. Husseman. Yes. The methodology was okay. And then their consultant who advised them on the methodology said that given the methodology and the process that they were applying, there was no way that you could take these five sites, apply that methodology and end up with Hanford as one of the final three.

How can we accept a decision that's based on—when their own experts and the NAS experts are saying they ignored their own process?

Senator Breaux. Each of you have pointed out the various impediments or technical problems with your particular sites, but isn't the next step—which is going to take 5 to 7 years—isn't that designed to look at those technical problems? And then a decision would be made. But what I'm hearing is total opposition to going to the next step, the site characterization process, which will be looking at the various objections that you're raising and seeing whether the shaft can be safely built or not, and looking at each one of your considerations as to locations or what have you, and then getting that information that you have participated in providing, and then make a decision 7 years from now whether to license a particular site or not. I mean, I don't see how we're ever going to address those particular technical problems without getting into a site characterization process, without it being hypothetical.

Mr. Frishman?

Mr. Frishman. Well, I think there are a few ways to respond to that. The major concern that we have is that we are aware of geotechnical issues at each of the three sites right now, and we're aware of how they were selected—geotechnical issues that could impact directly on the licensability of the sites. But in reality, we look at first of all the seriousness of those issues, the five to seven years, the approximate investment—the price keeps going up—of about $3 billion to get to the stage of selecting one of these. And at this point, based on how the sites were selected, and the problems that we are aware of relative to the sites, technical conservatism would lead all of us to take a much harder look at, whether these really the sites where we want to literally get in so far that we can't get out of them. We don't see anything that highly recommends any of these three sites technically, and in fact the selection process that brought them forward indicated that there were not even enough available data on any of the sites to make a selection based on long-term waste isolation, meaning post-closure factors.

Senator Breaux. But wouldn't your argument be just the same if we were saying, well, we'll spend a third of that. Wouldn't your argument have been that we're not spending enough? I mean, you make the argument that we're spending too much and therefore we're going to have to be committed with the process, but I guarantee you you'd be sitting there if we were spending a tenth of that, saying that we're not spending enough.

Mr. Frishman. I think the approach that we have suggested before, and I think it's implicit in what we're saying right now, is that the cheapest thing to do right now is buy some insurance. Buy some insurance that says that either these sites are about the best we can do and expect to do for a licensable site in this Nation that is likely to be one of two at the most, and make sure we're on the right track before we get in so far that what we have to do essentially is say, okay, we see some problems but engineers will fix it. That is not the thrust. The thrust is to make sure we have outstanding geology first and then enhance the containmentability with further engineering. We find geologic flaws at all of these sites with what little data there are. My background is in geology, and I'm not convinced that we can't do an awful lot better screening this Nation for some real good geology for deep geologic disposal.

Senator BREAUX. Okay.

Any more?

Senator REID. Mr. Loux, would you respond to the question that the Chairman asked?

Mr. LOUX. Certainly. I'd be happy to.

It seems to me, again, that there are really two answers, and I think that Mr. Frishman has really hit on the first one; that is that, in fact, there is so little technical data at the outset, and the plans are that no real serious data collection regarding the key site suitability issues is going to be gained until very, very late in the site characterization process. I think that, coupled with the fact that the Department of Energy in our estimation—in violation of the law—has already made a preliminary determination of suitability prior to characterization as opposed to after characterization as we think it ought to be made, that we think it's likely that it's going to be very difficult for anybody to stop this "steamroller"—as we've used the term—effect once you get down to the later aspects of site characterization, given the expenditure of $20 billion or $30 billion at that point at some given site. There's going to be an awful lot of momentum to find that site suitable whether or not it in fact is, and I agree with Mr. Frishman that the technical issues are at least one half of that picture.

The other is that the public in that State can never accept a repository as long as they think that they've been railroaded, and that's the current situation in all three of these States. And if you, as you eloquently put forward in the Nuclear Waste Policy Act, believe that public confidence is essential or else the project would fail—and I certainly concur with that—we're certainly not going to get there the way we're headed right now. So there are two responses to your question.

But I guess lastly, and I'd like to go one question back to your issue on contamination, much has been made about the Nevada test site in other committees and other places about potential contamination, and what's a little bit more nuclear waste relative to what's there already. We took a look at that issue, Mr. Chairman, and did some very cursory and very rough calculations. Based on our calculations it would take on the order of nearly 2,350,000 twenty-kiloton shots to equal the amount of radioactivity that's in a 70,000-metric ton waste repository. So the existing 700 shots that have been conducted out there are minuscule in comparison with what we might be facing relative to a waste repository.

Senator REID. Yes, sir?

Mr. HUSSEMAN. Could I respond to your question, also?

Why don't we just go ahead and go forward with site characterization and let's find out if the sites are okay? Given how we've got to where we are, how can we feel that we're going to get a fair shake during site characterization? When we started this out, we were supposedly looking for—somebody brought up this garbage barge that's out there. We can't even find a place to put that. If we're going to find a place that the public is going to be accepting, that their State is going to be the host for a nuclear waste repository, it's going to have to be a process that we can have confidence in and that is based on scientific decisions, not the way that it's been done so far.

We started out—we're supposed to be looking for the safest place to put nuclear waste, and we end up with two out of the three supposedly best places in the Nation, just by coincidence, happening to be located on Federally-owned property which already is involved in nuclear-related activities, which were selected for reasons having nothing to do with geology or hydrology. This is too hard to swallow, and there's no—how can we have confidence that we can go forward and get a fair shake when we have been, as Bob said, railroaded into where we are now?

Senator **Breaux**. Well, we thank you all. You are all obviously speaking for your States on something that is of major importance to the State, and I appreciate your being with us and I understand your concern and will continue to work with you to try and get something that will give confidence to the process.

We're not going to please everybody, no question. We can forget about trying to get a situation where everybody is going to say that the process works perfectly. The only thing we can do is make sure that we do the best we possibly can to get everybody heard on it and to bring the best possible minds to bear in making the selections. We'll have a helluva problem if we don't do something about it. We just can't continue to let it stack up, and that's true for every type of waste that we generate in this country. So we thank you.

This panel will be excused.

Because we have a Democratic policy luncheon I have to go to, we're going to recess until this afternoon and bring back the other three panels then. We'll recess until 2:00 p.m., and we'll take the panels at that time.

[Whereupon, at 12:15 p.m., the subcommittee stood in recess, to reconvene at 2:00 p.m. the same day.]

AFTER RECESS

Senator **Breaux**. The subcommittee will please come to order.

This afternoon we will continue our hearings, and we will invite up, at this time, the third of the day.

Commissioner Edwyna Anderson, Chairperson of the Subcommittee on Nuclear Waste Disposal, National Association of Regulatory Utility Commissioners, from Lansing, Michigan; Ms. Ann Bringloe, Vice President, Sierra Club, Washington, D.C.; and Mr. Mike Phillips, Legislative Representative, Union of Concerned Scientists.

We welcome you and are pleased to have you here. Commissioner, we have you listed first and we would be pleased to take your testimony.

STATEMENT OF EDWYNA G. ANDERSON, COMMISSIONER, MICHIGAN PUBLIC SERVICE COMMISSION, AND CHAIRPERSON, COMMITTEE ON ELECTRICITY AND CHAIRPERSON, SUBCOMMITTEE ON NUCLEAR WASTE DISPOSAL, NATIONAL ASSOCIATION OF REGULATORY UTILITY COMMISSIONERS, ACCOMPANIED BY RON CALLEN, STAFF COORDINATOR, SUBCOMMITTEE ON NUCLEAR WASTE DISPOSAL, NARUC; AND JOHN FLUMERFELT, DIRECTOR OF CONGRESSIONAL RELATIONS, NARUC

Ms. ANDERSON. Thank you very much, Mr. Chairman.

As you have indicated, I am here today representing the National Association of Regulatory Utility Commissioners, which we call NARUC. With me are the subcommittee's staff coordinator, Ron Callen, who is also of the Michigan Public Service Commission, and NARUC's Director of Congressional Relations, John Flumerfelt.

NARUC is a quasi-governmental, nonprofit organization founded about 98 years ago. Within our membership are the governmental agencies of the 50 States, the District of Columbia, Puerto Rico and the Virgin Islands, engaged in the regulation of utilities and motor carriers. These State commissions have been charged with, among other things, the task of ensuring that the power provided by nuclear-powered electric generation stations is reliable and reasonably priced; in short, that the public interest is protected.

The NARUC established by unanimous resolution in 1984 its intention to review and monitor on an ongoing basis the national high-level nuclear waste disposal program. Our goal is to enhance the Federal program and ensure that ratepayer funds are utilized most effectively, a reminder to you that it is ratepayers—not electric utilities—who are paying the bill.

NARUC deeply appreciates this latest in a series of opportunities to make its views known to the Congress. The problems currently facing the program are extensive and formidable. Only the Congress is empowered to implement solutions necessary to restore direction to a program which is, as you have seen even today, now in significant disarray.

Today I want to focus on just a few specific issues of importance to the furtherance of the program.

For many months NARUC has urged the DOE to formulate appropriate costs to be assessed for Defense waste disposal and to actively pursue the initiation of such payments. Fundamental to this issue is the quantity of Defense waste to be put in the repository. No agreements over the funding formula or the amount of waste to be disposed have been achieved. No payments have been made. The DOE treats this as an in-house matter between its Office of Civilian Radioactive Waste Management and its Defense Programs Office, while electric ratepayers continue to subsidize the national defense program. Billions of dollars are involved. Some in the Congress have stated their reluctance to make payments, as you will see from our full testimony submitted for the record today.

Defense waste payments ought to run concurrently with ratepayer payments based on a realistic and equitable assessment of what those payments should be. Congressional action to resolve this problem is a must.

In the interests of contributing to the best possible disposal program, NARUC has recommended ongoing assessment of DOE management and its organizational structure. It is not unreasonable, in the face of a $20 billion to $40 billion project, to identify any significant management improvement potential.

NARUC's experience in the utility field would support the fact that expert audits and reviews are readily achievable. We also have recommended attention to the concerns voiced by the General Accounting Office, that in their overall responsibilities and specific to the waste program, the DOE's auditing of contractors needs improvement. The DOE resists such recommendations. The Congress has the ultimate decision as to what improvements must be made, whether the DOE's delivery is adequate, whether the expenditure of funds is prudent and well-controlled, and whether the DOE is carrying out Congressional intent in administering this program.

The very direction and goals of the program are now under seige. In addition to the overall program goals, Congress provided through the act reasonably specific directions to the waste program. It set a schedule and major programmatic milestones. It required studies and, through the fee, the estimate of an overall budget. Nevertheless, substantial numbers of deadlines have not been met. Continual project schedule changes, as experienced in power plant construction, may signify a lack of overall control and lack of confidence in cost estimates. The 1998 date for the repository operation is announced as all but impossible, attributed in part by the DOE to the Congress' refusal last year to release all of the requested funds. Those announced budget cuts may well be in order; they should, however, merely precede affirmative Congressional programmatic orders—that is, a revised program with explicit objectives and attainable schedules. Throughout the development of this program the Congress must be uniformly specific as to its intent.

NARUC is also keenly aware of the matter of public acceptance. We have seen an increasing hardening of attitudes on all sides. Some time ago we requested Congressional attention to the intergovernmental and public problem. Substantial improvements must be made.

Total payments to date by ratepayers to Washington, including interest, now exceed $3 billion. In return, the entire program has been extended to 2003, five years longer than the 1998 mandate of four years ago. Now, after five and a half years of cost struggle, some in the Congress are beginning to notice that program costs are setting world records.

Public utility regulators believe that the immense sums generated by the 1 mill per kilowatt hour fee should be enough to safely; and permanently store the radioactive waste now lodged in their respective jurisdictions. We have no assurance that more will not be sought. Yet, there is no guarantee any fuel will move from its present site 11 years from now. Increasingly—and we are committed to carrying this message—local citizens and governments must realize that spent reactor fuel is now stored among us. We face additional costs and problems at home where that fuel has been, and will continue to be for a long time to come, in those 115 de facto MRS facilities, the nuclear power plants that, by the way, were not designed for storage for anywhere near the period of time that they obviously will be utilized. This in-State burden, the program difficulties, the open-ended cost arrangement, the debated final goals and the minimum five-year delay in the program give utility regulators profound pause.

In our commitment we recognize there is a legitimate cost for disposal that ratepayers must bear. However, as we have repeatedly advised the Congress, considering both equity and ability to pay, there is a limit to the financial resources of ratepayers for high-level nuclear waste disposal. Wasted money and resources have no place in the process. That includes legislative debate that focuses on less than overall programmatic problems.

The message to Congress is both obvious and urgent. As the creators of a delicately balanced piece of legislation designed to effectively handle the long-term disposal of high-level nuclear waste—a piece of legislation now in a significant and substantial state of disarray—only the Congress can step into the breach. Only the Congress can determine whether its intent is being followed toward a safe, cost-effective product.

We must all share in the responsibility of seeing to timely completion this essential program. NARUC is committed to assist in finding the proper solutions. It is the Congress who must lead the way.

Thank you.

Senator **Breaux**. Thank you very much, Ms. Anderson.

Next we hear from Ms. Bringloe.

STATEMENT OF ANNE H. BRINGLOE, VICE PRESIDENT FOR REGIONS, THE SIERRA CLUB

Ms. **Bringloe**. Thank you, Mr. Chairman, members of the committee. Thank you for the opportunity to present the views of the Sierra Club on the Department of Energy's high-level waste management program.

As a matter of national policy, the Sierra Club agrees that the Federal Government should have responsibility for the final disposal of commercial, as well as Defense, nuclear waste, and that geologic disposal offers the most promising technical option for isolating high-level waste from the biosphere.

We oppose regional or centralized monitored retrievable storage as an unnecessary and unwise addition to the Federal high-level waste program.

Four years after passage of the Nuclear Waste Policy Act, and one year after the announcement of the candidate sites for characterization, the Federal high-level waste program is itself a candidate for burial. The effort to select sites for the first repository, already running two years late, has been suspended by Congress. The effort to screen candidate sites for a second repository has been administratively cancelled.

The recently-submitted proposal for monitored retrievable storage contemplates a facility whose purpose is radically different from that envisioned by the Congress in the Nuclear Waste Policy Act or by the Department of Energy itself in earlier versions of the waste program. The State of Tennessee, which contains all three sites recommended by DOE for the facility, is concerned not only that it is likely to be the site of a de facto surface repository, but also that its formal opportunity to object to such a site under the Nuclear Waste Policy Act could be lost as a result of statutory misconstruction.

The steady decline and eventual complete loss of credibility of both the high-level waste program and the Department of Energy is perhaps the most disappointing development. The DOE has exhibited little intention to actually obey the spirit or the letter of the Nuclear Waste Policy Act from the very beginning, as was made clear by their early plans to begin drilling at Hanford immediately after passage of the act regardless of the fact that no site selection guidelines existed and no environmental assessment had been prepared.

The same institutional behavior continued with the manipulation of site ranking data to make DOE's favorite sites appear to have been chosen by a scientific ranking process, followed by the decision to suspend second round selection activities.

This continual movement away from the original intent of the act to create a rigorous technical process, and instead towards satisfying the industry as a first priority, has produced S. 839, a bill which strips away the last veil of technical or scientific repository site selection. At the same time, the evident disintegration of the repository siting process as managed by DOE has encouraged a new interest in alternatives to geologic disposal as evidenced by Senator Evans 'bill, an attempt to solve the problem by providing regional MRS facilities in lieu of a repository.

The Sierra Club believes that this Nation need not accept this defective waste management program, nor amendments to the Nuclear Waste Policy Act which would compromise the intent of that legislation. We can move forward towards a technically conservative, environmentally sound solution to the high-level nuclear waste problem by first examining the defects with the present program. The program must then be restructured on a technically rigorous basis and pursued in a manner that establishes credibility with affected States and tribes, and be put on a realistic schedule.

Industry and DOE spokesmen like to leave the impression that the disintegration of DOE's siting effort is due entirely to the cynical political resistance of the States, fueled by the ignorant anxieties of the great public about a technology with which they are unfamiliar. In fact, the public is not as stupid as DOE things. Our worries flow directly from the well-known technical flaws and bureaucratic stumblings of the DOE program. Despite DOE's attempts to patronize us, we have grown more skeptical the more we have learned about the inner workings of the DOE program. Let me quickly summarize a few of these defects.

The criteria that governed the original selection of sites are inadequate. The guidelines require isolation of high-level waste for 10,000 years within ten kilometers of a site, but wastes will be lethal for much longer. These guidelines provide faint assurance that wastes will remain isolated and contained during the time required for the radioactivity to drop to acceptable levels.

The guidelines were written specifically to be able to grandfather-in all the sites from DOE's old administrative program. The geohydrology guidelines are too vague to assure waste isolation and containment.

I come from Washington State, Senator Breaux, and I know very clearly that the inclusion of the Hanford site with its obvious ground water problems is evidence that those guidelines have already failed.

DOE has also, from the beginning, allowed the program to be politicized, thus seriously compromising the entire process. In May of 1986, the DOE decided to drop—which the Sierra Club considers a completely illegal move—they decided to drop the second round of sites from consideration as repositories. The second round was put into the act for very good reasons, and some of those reasons were to provide geologic and geographic diversity to the program so that when we did come to the end of the selection process we could be assured of having a good technical site.

The Department of Energy has made independent review of the geologic and hydrologic data by the affected States very difficult, in many instances making State and tribal participation in the process frustrating and meaningless. Documents are sometimes discovered only after extreme pressure is applied to the Department of Energy. An example of this is the decision memorandum prepared by DOE on the costs and benefits of dropping the second round from consideration. This memorandum, which was discovered by investigators from House committees, actually cited "immediate political relief" as a major reason for halting the second round. It is no wonder that it took a special investigation to find such a telling document. The States, tribes and citizens 'groups can't help but wonder what other information has been kept from the public.

I know that there have been some questions about the multiattribute utility analysis, the MUA, and I think to get the idea of what DOE actually did with this information, regardless of how the fancy titles were put on the scientists they hired or what their salaries were, basically they had a recipe, then they didn't follow the recipe and they ended up with something that perhaps the dog wouldn't even eat. There was nothing wrong with the analysis, with the methodology; however, they did not see it through to the end, and the product that they came up with was flawed.

Each of the final three sites to be characterized has known flaws which could lead to the elimination of the site on technical grounds. The guidelines, as you know, failed to eliminate even Hanford, the most obvious dud in the group. The existence of these problems in the candidate sites greatly increases chances that a fully-characterized site could prove to be unusable. One could imagine the spectacle at the Kentucky Derby if all the horses at the starting gate were 20 years old and lame. With such high costs at stake, the DOE should, at the very least, have started their repository race with "sound horses." Let's take a very brief look at the horses that DOE chose.

Hanford, five miles from the Columbia River, located in fractured, faulted basalt, with problems of ground water systems. It is seismically active, and there may be oil and gas deposits under it.

Yucca Mountain, the tuff site, is subject to earthquake tremors produced by the Nevada test site activities. It may be an active volcanic site somewhere in the future, and it also has natural earthquakes.

Deaf Smith County, Texas, located in the prime agricultural production area in the country. The repository would be located beneath the Oglala and Santa Rosa aquifers— as you've heard, major sources of irrigation and drinking water, and it is a sole-source aquifer.

S. 839, the Johnston-McClure bill, seeks to rescue DOE's waste program by giving incentive payments to States willing to take a repository site in exchange for essentially giving over any and all rights a State has under the terms of the Nuclear Waste Policy Act. The basic assumptions behind S. 839 are that it is politics which are holding up the program, not lack of technical expertise or the presence of disqualifying characteristics of any specific site.

This assumption is inaccurate. S. 839 cannot right the DOE's sinking boat because it does not address the real problems which have doomed the current program. It does nothing to encourage the scientific and technical efforts which would assure a safe repository, and it does not remedy the institutional defects which have plagued the program.

Any State Governor would be a fool to enter into this Faustian bargain.

The time to correct the inadequacies of the site selection process is now, before the huge expenditure of site characterization money, not afterwards. Once enormous institutional and fiscal resources have been spent on a proposed site, it would be difficult to redirect program efforts even if the site contained lethal defects. Calling a halt now and taking time to evaluate the high-level waste disposal effort as a whole may prevent costly mistakes and years of wasted effort.

Congress should establish a mechanism through which a review of the technical and institutional management of the present waste program can be conducted. Recommendations have been made by Governor Clements of Texas and Governor Gardner of Washington State that a special commission be formed to carry out this investigation and recommendation process. The Sierra Club views this idea as a responsible path to reformation and restart of a high-level waste program which can be technically competent and politically possible.

To those who object that there must be no delay in the repository siting schedule, one might reply that it is better to get there late than never at all. The Nuclear Waste Policy Act's 1998 goal for repository operation never had much to do with any realistic assessment of the time necessary to develop the Nation's first operating geologic high-level waste depository, as the Department's revised mission plan makes clear.

Since the passage of the Nuclear Waste Policy Act, the development and licensing of modular dry cask spent fuel storage has largely made moot the spent fuel storage crisis predicted by the utilities during debates over the act. Dry casks are already in use at some utilities, including VEPCO and TVA, and there seems to be little restriction to their wide availability in the near future as a low-cast method of incrementally increasing at-reactor storage capacity. Legislation has already been introduced which would allow utilities to take credit against their obligations to the Nuclear Waste Fund for any expenditures necessary to expand their on-site storage capability after 1998 if further time is necessary for the development of a final repository.

Further time and a restructuring of the Federal high- level waste disposal effort on a more rigorous technical footing and a more adequate institutional basis will be necessary. Without such a restructuring, this program will likely end up with the same dismal record of failure that past DOE and AEC waste disposal efforts have accumulated over the years.

Thank you. I'd be happy to answer any questions.

Senator **Breaux**. Thank you very much, Ms. Bringloe.

Mr. Philips?

STATEMENT OF MICHAEL PHILIPS, LEGISLATIVE REPRESENTATIVE, UNION OF CONCERNED SCIENTISTS

Mr. **Philips**. Thank you, Mr. Chairman, for the opportunity to appear today. I think I will summarize my statement and I will try to be mercifully brief.

One of the key questions in the nuclear waste debate is, has the Department of Energy applied sound scientific and analytic techniques? I'd like to explain why the answer to that is no, and I'd like to focus on the first round site selection. I think there are also problems with the second round, but I think it's in the first round where DOE has fostered the greatest misperception that they have performed satisfactorily.

This issue now is over a year old but it hasn't been settled, and I think it needs to be revisited before we can get the program back on track, to use the term that you used this morning.

The problem with the first round selection process, basically, is that there was no overall methodology. There was a decision-aiding methodology which was discussed by Mr. Rusche this morning and which purported to contain an objective, scientific comparison of the five sites under consideration, but there was no overall methodology explaining exactly how this information would be incorporated into the decision on which of the five sites would make the cut to the three selected for site characterization.

The purpose of any methodology is to spell out in advance the approach that you're going to use in analyzing a problem, and that way reviewers of your analysis can be sure you haven't forced a certain set of results by changing your approach along the way. DOE did change their approach along the way. For example, one of the criteria used to compare candidate sites was cost, the hypothetical cost of building a repository and transporting high-level waste and spent fuel to it. Most everyone would agree that cost is certainly something worth considering; whether it's the highest consideration or not is an open question, and the Nuclear Waste Policy Act, in fact, says you have to consider costs.

DOE did consider them, too, at least initially in their analysis that we now know as the multiattribute utility analysis. When these costs were plugged into the analysis they dominated all other criteria so that the most expensive sites showed as the worst sites overall. At that point, DOE decided to create a new ranking, eliminating costs. Now, whether you think that the costs should dominate or not, DOE did not spell out this approach in advance. They waited for the results, and then it appeared that they threw out the ones that they didn't like. Proper scientific method requires that you spell these things out in advance. Professor Ross Heath, who is one of the members of the National Academy of Sciences' Board on Radioactive Waste Management, which reviewed DOE's methodology, commented on DOE's exclusion of costs by saying, "To say that costs can be dropped constitutes a double dipping that I am sure would never pass an IRS audit."

Another one of the consultants to the NAS Board, Professor David Bell of Harvard University, stated, "The exclusion of these costs doesn't make much sense, as far as I can see."

I got these quotes from telephone conversations and written correspondence that I had with the members of the Board on Radioactive Waste Management. I'd like to submit the copies of those letters and summaries of those phone conversations.

Not only was cost inappropriately dealt with, but in another case, while considering health and safety criteria in comparing the sites, DOE excluded injuries and genetic damages from consideration. They do consider fatalities, and when you're building and operating a repository and you're projecting that there are going to be fatalities, presumably there are also going to be some injuries. And DOE did originally include them, but then argued that they didn't change the rankings of the five sites within the health and safety category. But by excluding injuries and genetic damages, DOE down-played the health and safety impacts relative to other factors, and this became especially significant after the costs were excluded. So you see that what you end up with, with the current three sites that were selected—the winning factors end up being socioeconomic and aesthetic factors. Those dominated the analysis at the end. As was the case with the exclusion of costs, this approach was not spelled out in advance by DOE either.

According to Professor Detlof von Winterfeldt, another consultant to the NAS Board, "After excluding costs, it was clearly improper not to pay attention to injuries and genetic damages."

A third example involves the rock type diversity criterion. DOE argued that since all five sites in question were suitable, the final decision on which three to select could be made on the basis of diversity of rock type. Again, in addition to the question of whether that's appropriate is the question of whether DOE was explicit in advance about how rock type diversity would be used—as a tie-breaker rather than as another factor to be incorporated into the decision-aiding methodology. Rock type diversity could have been incorporated through a procedure known as portfolio analysis, in which triplets of sites are examined as opposed to individual sites. This approach was explicitly recommended by Professor Ralph Keeney, as we already heard this morning. He was the one who helped develop DOE's overall methodology and has since performed his own analysis—which DOE claimed it would be too expensive to do—and his analysis shows that it would have been a different set of three sites selected had DOE used this approach instead of their own crude use of applying diversity on a sort of haphazard basis.

We don't know exactly how they applied diversity; we only know the results of it.

Now, significantly, NAS reviewers and DOE consultants are not the only ones who have expressed concern about DOE's decision-making. In an internal DOE memorandum titled "Principal Shortcomings," Tom Isaacs, Deputy Associate Director of DOE's Office of Geologic Repositories and one of the managers of the methodology's development makes the following comments about the near-final drafts of the decision document: "New write-up blatantly manipulates the methodology and its application to force it to spit out the 'proper' sites. It throws out certain factors, arbitrarily reduces or increases the value of others, picks certain tradeoffs as better than others, and portrays the methodology as decision-maker." And he goes on, and I've got more of it in my written testimony. That's a direct quote from one of the top decision-makers at DOE.

The conclusion, I think, to be reached from these procedural shortcomings is that if you allow DOE to continue on its current course, even with improved scientific review from here on out, you're building on a weak analytic foundation. You don't need to take the program back to square one—and I'm aware that you're concerned, Mr. Chairman, about all the time and money that's been spent so far—but I do think that you need to revisit some of the problem areas, such as the process for arriving at the site nominations.

DOE, for their part, argues that you can't create a methodology where you simply feed in the data and it spits out the correct sites, and that human judgment plays an important role, as well. That's true, but where human judgment comes into play, so can human bias. And in order to minimize bias and even the appearance of bias, it is absolutely essential that there be independent review of the parts of the decision-making process where that judgment comes into play. In fact, the NAS Board repeatedly recommended the use of outside experts to provide this function; and while the NAS Board officially states it found no evidence of bias in DOE's implementation of the methodology, the fact is that DOE's methodology report went through substantial revisions by DOE, including human judgment revisions, after the final review by the NAS Board. The Board never reviewed the final methodology document or the final decision document.

Now, there is also a general misperception that the NAS Board has endorsed DOE's implementation of the site selection methodology. I think that's been cleared up a little bit today, but that misperception has in some cases been fostered by the Department of Energy, and individual NAS Board members, in my discussions with them, have expressed concern about that.

Also, you should be aware that the NAS provided a very limited review even of the multiattribute utility analysis document. Their review of that subportion of the overall decision was very small, and their review did not proceed according to normal NAS reviews. I think if you talk to staff people at NAS, they'll confirm that. According to NAS Board Staff Director Peter Myers, in a conversation I had with him, "It was an ad hoc, last ditch, squeeze-it-in-under-the-wire kind of effort."

Despite the limited review, some revealing comments have come from individual Board members. In addition to the Board members and consultants I have already quoted, one of the Board members, Susan Wiltshire, stated in a phone conversation, "It's possible to intellectually rationalize DOE's decision, but it's all based on a series of human judgments which can be made any number of ways." Another Board member, John Matuszek, Jr., commenting on translating physical data into a mathematical format, which DOE did behind closed doors, stated, "It is very open to inclusion of bias." He also stated that he thought what DOE was looking for was "the imprimatur from the Academy." And other Board members say more of the same kinds of things, and you've got those in the document I just gave you.

In all fairness, I should state that a number of NAS Board members are supportive of DOE's site selection decisions. But what is not widely known, and which I hope I have made clear today, and also what DOE has never acknowledged, is that there is not a consensus among the NAS Board members and consultants on this. It is particularly significant that the two consultants that were hired by the Board because they felt they didn't have enough expertise in decision analysis are among the harshest critics of the DOE decision.

I think I will end right there, but I was going to go on and talk about problems with the fee adequacy study and with the decision on the MRS. One of the Board members, William Colglazier of the University of Tennessee, has just finished a study of the MRS in which he says, "The subjective judgment of the Director of the Office of Civilian Radioactive Waste Management, based in part on political considerations, formed the basis for the MRS site selection in Tennessee, and specifically, Oak Ridge."

Senator BREAUX. I think that would be a good stopping point because I have to go and vote I'll return shortly to ask questions. The committee will be in recess for about 10 minutes.

[Recess.]

Senator BREAUX. The subcommittee will please come to order.

I'm not sure which one of the witnesses referred to it—there's a concept or a feeling being expressed that somehow the Department was really manipulating the process. I get the expression or the feeling that what you're saying is that they made a decision, and now they're trying to justify their decision. Yet, we have seen a whole bunch of potential sites that were the subject of an environmental assessment; all of you, I would imagine, support the process of doing environmental assessments.

We then saw those sites the subject of a process that the National Academy of Sciences said was a good process. We now see those candidate sites reduced to three, which will be candidates for the site characterization process, which will take a period of anywhere from 5 to 7 years. After all of that has been done, we narrow it down to a recommended site.

What's wrong with that process? We're talking about something where environmental assessments have been done, where a process that the best scientists that represent our country have said is a suitable procedure, and then finally, all of the technical problems with any of those sites would be worked out through a site characterization process, and we end up with one site after that. How can that be manipulation? What's the problem?

Ms. BRINGLOE. The process that they went through was, indeed, looked at, and the process itself was endorsed. However, the Department of Energy did not follow that process rigorously to the end, and therefore the product was not the accurate product that it could have been if they had followed the process correctly. The Sierra Club has watched this thing ever since the act was passed, and we are extremely worried that we're going to end up spending billions of dollars on characterization and we're going to end up with repositories that are technically unusable.

Senator BREAUX. There's no question that the process is expensive. We get arguments from both sides. If we weren't spending enough money, people would say, you're not spending enough to get adequate and accurate information; you're giving this an insignificant amount of attention; you're not spending the dollars that are needed to make the difficult scientific choices, if we weren't spending enough.

Now, because we are spending so much, I am hearing people say, well, you're spending so much that you're going to come down to a decision date that says we have to pick a site because we spent so much money studying the sites. Where do we go? We're criticized if we don't spend enough, and we're being criticized because we've spent too much, leading to a final conclusion.

Ms. BRINGLOE. I don't think it's the spending so much as what you're spending it on. If there's any question from legitimate scientists about the sites that ended up being the top three, as far as whether they are indeed the best sites technically, then we ought to go back and make sure that they are the best three. And there is a significant amount of question about that.

I don't want to commit that money unless we're absolutely sure that those are the best three.

Senator BREAUX. Well, isn't that the whole purpose of the site characterization process? We've got three sites that they've come up with. Some people say that they're good sites, some people say they are flawed, some people say they were arrived at because of improper use of data. But that's what the next step is all about. The next step is to weed out those that do not meet the final criteria. That's what this whole site process selection is all about. Why prejudge what the site characterization process is going to produce before we even get into it? I'm hearing people saying, now, "I don't even want to look at the results of that study. I want to stop it right now." How can anyone say that when we haven't even begun the detailed process of examining the potential sites that have been selected? That's what I'm hearing.

Mr. PHILIPS. Well, the purpose of the whole exercise that resulted in the May 28th decision was presumably to select the three best sites for that characterization so that you would have a higher likelihood of a good return on your dollar, that those sites would probably turn out to be suitable for a repository. But that process was flawed, and you have a better chance of failure in those site characterizations. That earlier process was needed prior to undertaking site characterization, and it was in that process where DOE spun its wheels and, if you will, wasted money. And if you continue with site characterization now, you're continuing to build on this house of cards, and most of the cards are jokers.

Senator **Breaux**. Mr. Philips, I noted that you have, in your testimony criticized the cost situation——

Mr. **Philips**. The adequacy study?

Senator **Breaux** [continuing]. As not being considered. You point out that DOE decided to eliminate cost from the analysis.

Mr. **Philips**. Right.

Senator **Breaux**. Well, what's wrong with that? I've heard groups come before Congress time and time again, particularly on environmental matters, and make a very strong argument that you should do the right thing and then decide what the costs are going to be. Then after you've made the right decision, then see if we can afford it. That seems to be what DOE has done in this situation when they have eliminated costs as one of the factors, and yet, now, you're saying that they shouldn't have done that. I've heard group after group make the exact opposite argument, saying, make the best decision and then factor in the costs and determine whether, as a Nation, we can afford it. You're making the opposite argument, now.

Mr. **Philips**. Well, my point was that you make a decision on that, and then you are consistent. What DOE did was, to initially consider costs. They went through lengthy processes to get proper estimates of the costs. It was only after they ran the numbers and got actual site rankings that they then eliminated the costs. Proper analytic procedure says you don't do that; or if you do, you'd better have independent experts reviewing that decision, which they didn't.

Senator **Breaux**. So your recommendation is that they should consider costs, or not consider costs?

Mr. **Philips**. Well, according to the Nuclear Waste Policy Act they're required to consider them, and in their own guidelines they also say that they should be considered. In fact, DOE has three categories of priority of criteria, and transportation costs are in their second one. So obviously at one point they didn't consider them insignificant.

Senator **Breaux**. Of the nine preliminary sites that were considered, do any of you that are criticizing the three that have survived that process know of any sites that, in your opinions, should have survived the selection process that did not? Or are we going to find no site that is suitable, and we're going to get back, in your opinion, to looking at some other way—whether it's an above-ground storage procedure or leaving it at the 110 potential sites like we have now? We've got 100-something MRS's right now which were not designed for that purpose, which are probably a heck of a lot more unsafe than a permanent repository or monitored retrievable storage program that we're planning.

We've got a terrible situation right now. I don't think that anybody could make the argument that the situation we have now at 100 sites around the country is better than the three potential sites could be that are now on the drawing board. Do any of you have any recommendations as to where you think we ought to be? What three sites you would like to see on the table?

Ms. BRINGLOE. I don't think I would want to be in the business of naming sites.

Senator BREAUX. But you are, by naming the ones you don't think meet the criteria. In effect, you're saying, this one's not good, and this one's not good, and this one's not good.

Ms. BRINGLOE. I'm not naming sites.

Senator BREAUX. But by doing that, we've got 100 sites that are being named, and those are the ones that are being used right now. So by saying that we are not going to accept these three because they are flawed, we are in effect naming 100 sites that are currently being used that were never designed for that.

Mr. PHILIPS. I'm not saying that those sites are flawed. And at this point, it's too early to say what is the best site——

Senator BREAUX. Well, I heard "flawed" all over the testimony out here.

Mr. PHILIPS. I'm saying that the process for deciding on the sites was flawed.

Now, those three sites may very well be the best sites. In fact Nevada, listed number one, may be the very best site in the country to put the waste, but you wouldn't know that from how DOE has conducted its analysis.

Senator BREAUX. Well, what's the purpose of the Site Characterization Program? Isn't that to look at the flaws and determine whether they could be corrected technically?

Mr. PHILIPS. Yes, but we're getting ahead of ourselves. What was the purpose of the whole process that led up to the site characterization process? You have to narrow the sites to the three best ones for characterization. That was the intent of the whole process that ended with the May 28th, 1986 decision. That was the process that was flawed, so you end up characterizing sites that we don't know to be the best ones to characterize.

Senator BREAUX. Would you agree with me that the 100 sites that we have right now are also dramatically flawed? What process was gone through to select those sites?

Mr. PHILIPS. I think that as we see the development of dry cask storage, we'll see the pressure to hurry up and build some type of repository or MRS eased.

Senator BREAUX. Does the Sierra Club recommend the dry cask as opposed to a permanent repository?

Ms. BRINGLOE. We feel that there is an intermediate step that could be taken here, and it has two parts to it. One of the parts is using the current dry storage technology to store the waste more safely at the reactor site, or perhaps off-site if the reactor is in a precarious place. There are a few reactors which are, in fact, over earthquake faults and maybe it wouldn't be a good idea to store anything there.

Senator BREAUX. So is it the Sierra Club's recommendation, then, that we scrap what the process——

Ms. BRINGLOE. Absolutely not. We are committed to finding a geologic repository. We have been all the way along. However, maybe we should look at a larger number of sites a little more thoroughly and repeat the process of site selection with a little more information. I don't think we need to do full site characterization on every site that we've ever considered for a geologic repository, but we believe that we don't have enough information to have chosen the three that the DOE chose. And at some point, we expect and we hope that we will have our geologic repository site. That's what we want.

Ms. ANDERSON. Mr. Chairman, if I may interrupt just to indicate that NARUC has taken no position with regard to the siting. What is extremely important here in my judgment is the fact that anybody who is affected by this must find both the process and the managers credible in order to go along with the program, and it seems to me much more important to be focusing on the overall management and structure of this operation and the problems that have arisen that diverge from the original intent of the Congress rather than focusing specifically on the kinds of problems that are more technical in nature. It's as if the political aspects, the public acceptance aspects, are somehow significantly less important than the technical aspects, and it seems to us that those go hand in hand and ought to be viewed with the same seriousness of purpose if this is ever going to get off the ground.

Senator BREAUX. All right. There's no question; no one can disagree with that. It's a question of how we get there. How do we devise a program that people are going to support? My State is probably no different from anybody else's. Everybody has the same situation, and not only with this waste. As Senator Simpson said this morning, we can't even get rid of garbage. You think we don't have a problem? If we can't get rid of 3,000 tons of garbage coming from one city in the Nation, how are we going to get rid of 70,000 tons of high-level radioactive nuclear waste that we're producing that's scattered all over the United States right now at facilities that I would question whether they were ever designed—certainly never studied—for the purpose of disposing of it. And that's what we're doing. This recommendation is to go back and start all over again. I daresay that if we do that, somebody else is going to be coming in and saying the same thing, "You're doing it all wrong again."

Ms. BRINGLOE. I don't think we have to start all over again. We have come a long way. We do have a large pool of sites that we could look at, but there are some deficiencies that are evident.

One of the reasons that the Sierra Club supports at reactor site temporary storage, perhaps using dry cask technology, is because we don't have confidence in the transportation plans that we have seen come from the DOE. The cask technology for transportation and the safety factors that we consider are needed for public health and safety are not where they should be. We don't feel that it is safe to start trucking this stuff around. It would be safer if we put it in some kind of a container and did our homework for a little longer.

Senator BREAUX. Well, I appreciate your being here. It just shows you the difficult decisions that we have to face. We have to make some decisions. We can't just continue, to handle it in the manner we've been doing. I appreciate your contributions. It's going to be difficult but with your help, hopefully, we can get something done.

Ms. ANDERSON. Sir, if I might just add one final thing, and that is that in the effort to put together the act that is now the focal point of this whole effort, there was consensus building; there was a tremendous consideration by the Congress, and an arrival at a conclusion that a program could get underway. It was when managers began to diverge from that, and in the absence of strong Congressional intent as to where it is in this process, that the whole thing has begun to become unglued.

I would urge that the Congress, as the Board of Trustees of this whole effort, express not by the removal of funding and without some assertions as to where you want the program to go—that you make clear either that you want the DOE to stay on target with the existing program, or that you will, by some assertive action, direct them to do something specific otherwise. That's what we're calling for.

Senator **Breaux**. Okay. I appreciate it. Thank you very much for your suggestions.

This panel will be excused.

We welcome up our next panel, which consists of Mr. William Burke, Director, Umatilla Nuclear Waste Study Program, Confederated Tribes of the Umatilla Indian Reservation; Mr. Del White, Nuclear Waste Policy Act Program of the Nez Perce Tribe; and Mr. Russell Jim, Yakima Indian Nation. We welcome you, gentlemen, and we will be pleased to receive your testimony.

Mr. White, go ahead. We have you listed first. If you would like to go ahead, we would be pleased to receive your testimony.

STATEMENT OF DEL T. WHITE, NEZ PERCE TRIBAL EXECUTIVE COMMITTEE, ACCOMPANIED BY RON HALFMOON, PROJECT MANAGER, NUCLEAR WASTE POLICY ACT PROGRAM OF THE NEZ PERCE TRIBE

Mr. **White**. Thank you, Mr. Chairman. As you stated before, my name is Del White, a member of the Nez Perce Tribal Executive Committee, which is the tribal governing body of our tribe. I am also the chairman of the subcommittee of the governing body on nuclear waste. With me today is our nuclear waste manager for the tribe, Mr. Ron T. Halfmoon.

We have submitted testimony to the committee for the official record of this hearing, and I would like at this time to summarize our testimony and our policy recommendations.

First off, I would like to make it clear that the Nez Perce tribe has publicly committed that if we can be convinced that the repository which is proposed to be placed within our tribal possessory and usage rights area, areas which are guaranteed to us by treaties ratified by the United States Senate, is safe, that no reasonable scenario exists under which dangerous levels of radioactivity will be released from the repository, we as a tribe will not exercise our statutory right to disapprove the Hanford site.

I start with this point because it has been widely assumed that all criticism of DOE and its implementation of the act stems from an unyielding bias against the repository program. This is simply not an accurate assumption. We believe that the Nuclear Waste Policy Act is a good piece of legislation, as has been mentioned by previous panels, but that this legislation has not been properly implemented. DOE's performance under the act does not provide us with much confidence or the Department with much credibility.

There are several major areas where DOE has had the opportunity to effectively implement the act, but instead has performed in a very frustrating problematic way.

The first area concerns DOE's failure to affirmatively involve the tribes and States. The Nez Perce tribe has spent most of the time, since we have been certified as an affected entity, trying to convince DOE to treat our affected tribe status as full participants in the Nuclear Waste Policy Act process. It has been, at minimum, a very pressured experience; however, two recent DOE decisions—tribal eligibility under section 118(b)(3), which is impact assistance, and the eligibility of section 117(c)(3), which deals with the elements for consultation and cooperation agreement negotiations, have been positive.

We believe that active congressional oversight, including use of the appropriations process, played a significant role in these decisions.

Beyond the specifics of the particular problems of affected tribes, both tribes and States have similarly suffered from DOE's lack of real affirmative action to involve us in the process. Thirty minutes' notice on EA's and no notice on the second repository decisions are two examples. Grant delays also hinder our ability to carry out important environmental data collection in a timely manner. For example, it was only 10 days ago, May 22, 1987, that DOE authorized the Nez Perce tribe to proceed on the items in our August, 1986 grant application. We, however, still have not received a final dollar amount for the grant.

More fundamentally, we do not believe that DOE has acted objectively in determining the siting criteria for their first repository, and then selecting the sites for characterization and in making what we believe is an illegal decision to postpone the second repository.

Our written testimony details our reviews in these areas. At this point in the Nuclear Waste Policy Act, we are at a very important juncture. DOE, through the mission plan it will shortly submit to the Congress, in effect attempts to make de facto changes to the Nuclear Waste Policy Act. The critical question is, how does Congress address the proposed statutory changes?

We believe it is critical for the authorizing committees to address these issues of statutory changes. Whether a consensus can be struck for amendments to the Nuclear Waste Policy Act, or some interim measures be put in place for the continuing resolution, remains to be seen. The views of the States and tribes on the mission plan when available, however, should be a key part in the review process.

As our written testimony indicates, we believe the siting process to be so flawed that any steps toward characterization should be curtailed and that all necessary steps in developing siting guidelines and site selection be revisited in an independent and impartial manner.

Mr. Chairman, that concludes the summary of my written testimony.

Senator BREAUX. Thank you, Mr. White.

Mr. Burke.

STATEMENT OF WILLIAM BURKE, DIRECTOR, UMATILLA NUCLEAR WASTE STUDY PROGRAM, CONFEDERATED TRIBES OF THE UMATILLA INDIAN RESERVATION

Mr. BURKE. Thank you, Mr. Chairman. My name is Bill Burke, and I am a member of the Umatilla Tribe and Director of the Umatilla Nuclear Waste Study Program.

The program to site-construct repositories for the permanent disposal of high-level radioactive waste that you so carefully crafted in the Nuclear Waste Policy Act has been seriously jeopardized by DOE's flawed implementation of their responsibilities under the act.

The repository program is hopelessly mired in dozens of lawsuits and new proposals to alter the Nuclear Waste Policy Act framework which are introduced on a regular basis in Congress. As an affected Indian tribe we, like the other affected parties, have many disagreements with DOE, but we all agree on one thing. The repository program is in need of congressional review and redirection.

We appreciate this opportunity to inform the subcommittee of our views, which we hope will be of some assistance in your deliberations on the repository program.

I have submitted extensive written testimony for the record. I will only summarize these remarks today.

While deliberating on the Nuclear Waste Policy Act, Congress struggled with the need for the safe disposal of nuclear waste and the anticipated opposition to such a disposal facility by local residents and their State or tribal governments. In the hopes of avoiding this conflict, Congress crafted an important oversight role for affected States and tribes. Congress felt the participation of these affected parties in the repository program would promote public confidence in the safety of nuclear waste disposal.

The consultation and cooperation requirements were designed to ensure that DOE responded to local concerns and met its statutory and regulatory obligations. Adherence to this process, it was hoped, would result in a site selection methodology for two repositories that was technically sound, and therefore credible. The integrity and credibility of the site selection and characterization process would then result in repositories that were safe and, if not embraced by affected governments, would at least be acceptable.

All has not gone as planned, and DOE is largely to blame. The selection of sites for characterization for the first repository, especially Hanford, sacrificed both the technical merit and the credibility of the Department's site selection decisions. Consider the gymnastics DOE performed to select Hanford for characterization.

One, according to NRC's review of the Hanford environmental assessment, DOE made many findings of favorable site conditions based on sparse data that could just as easily support adverse determinations. The NRC characterized many of DOE's favorable findings as "premature," "extremely tenuous," "overly favorable" and "optimistic."

Two, DOE systematically deleted critical references to Hanford in the MUA.

Three, DOE rejected requests by the affected States and tribes and by the National Academy of Sciences to permit outside expert review of the application of the MUA to the site selection process.

Four, finally, DOE ignored the ranking of its own MUA in selecting Hanford for characterization despite its fifth place ranking and the conclusion of DOE's experts. They deleted from the final version of the MUA that Hanford was substantially worse than the other four sites.

Five, DOE also sought to justify its selection of Hanford by arbitrarily disregarding Hanford's transportation impacts and repository costs, despite the Nuclear Waste Policy Act's requirement that each of those factors be specifically considered in the selection process.

DOE's second repository program has been implemented with similar grace. Even Secretary Herrington now agrees that his decision to indefinitely postpone the second repository last May was illegal. Aside from its legality, the decision upended the sensitive political balance upon which the repository program was so precariously perched.

The failure of the consultation and cooperation provisions in the Nuclear Waste Policy Act helps explain the demise of the repository program. DOE has simply failed to grasp the independent oversight role that Congress intended for affected States and tribes. The Umatilla Tribe was engaged in negotiations with DOE for a consultation and cooperation agreement for one and a half years before we terminated those negotiations last January. After a dozen formal and informal negotiation sessions we were unable to get through the difficult issues of our oversight and participation in the site characterization process because of problems with DOE's narrow interpretation of the scope of our treaty rights and of the level of affected tribe participation in the repository program.

We also decided to end negotiations because of DOE's failure to finalize our grant for fiscal year 1987. We are nine months into fiscal year 1987, and DOE only finalized our grant last week. This delay has severely hampered my program's ability to review and comment on DOE's activity in a timely fashion.

As a result of DOE's flawed implementation of its responsibilities under the Nuclear Waste Policy Act, the repository program has been brought to a virtual halt. In our view, reviving the program will require the following.

One, a new site selection procedure based on technical merit and a process, the objective of which is the selection of sites that provide maximum protection of public health and safety and the environment, not just suitable sites. And while we feel financial incentives are appropriate when the best site has been found, we adamantly oppose any proposal that replaces technical excellence with financial incentives as the driving force behind siting selections.

Two, an independent analysis of projected waste volume from both civilian and Defense sources is needed to determine the need and timing for a second repository. If the analysis concludes a second repository is unnecessary in the near term, fairness necessitates including crystalline sites for consideration in the first repository program.

Three, characterization of three sites should be maintained to ensure that a technically superior site is chosen.

Four, the independent oversight authority of affected State and tribal governments should be preserved. The involvement of affected governments remains essential to developing public confidence in repository facilities by ensuring that DOE meets relevant statutory and regulatory requirements. We oppose any proposal which would dilute the vigorous oversight authority of affected parties in exchange for financial compensation.

Mr. Chairman, I speak for the Umatilla Tribe in telling you that we are prepared to work with this subcommittee to make the repository program work as Congress intended. Reviving the stagnating repository program will require Congress to take corrective action to get the program back on track. We urge the subcommittee to maintain their commitment to the independent State and tribal oversight of a repository program rededicated in its effort to locate nuclear waste facilities which will provide maximum protection to our people and our environment.

Thank you.

Senator Breaux. Thank you very much, Mr. Burke.

Now, Mr. Russell Jim.

STATEMENT OF RUSSELL JIM, MANAGER, NUCLEAR WASTE PROGRAM, YAKIMA INDIAN NATION

Mr. Jim. Thank you, Mr. Chairman and members of the subcommittee. My name is Russell Jim. I am manager of the Nuclear Waste Program for the Yakima Indian Nation. I would like to thank you for this opportunity to present our views about the status of the nuclear waste disposal program. We have submitted written testimony which details our concerns about the program. They are similar to the concerns of other tribes and States, so I will not repeat them all now. We request that the full prepared statement be included in the record of these proceedings.

As I heard earlier, Mr. Chairman, in reference to the individual that "discovered" this country, as a gentle reminder, he was an individual that didn't know where he was going; when he got there, did not know where he was; and upon returning home, did not know where he had been.

And we are also prepared to give you further history from the involvement of the Yakima Indian Nation, since we are situated next door to the oldest and largest nuclear dump in this country, if not the world, and it is not the NIMBY syndrome; it's the NIMFY syndrome, where it is in my front yard. It is in ceded land that the United States of America in its treaty with the Yakimas made, that we would forever be able to utilize this land for our natural purposes. We have been denied 40-some-odd years' use of this land because of national security and fear of the unknown today.

Today I would like to discuss a particular issue which should be of interest to the subcommittee, the very different conclusions that are reached by the respective parties about the suitability of the recommended sites.

State and tribal officials are convinced that the site selection process has been seriously flawed. Looking at the same information and process, optimistic observers conclude that there is no reason not to proceed with the sites recommended by DOE for characterization. All of the involved parties agree on one point: not enough is now known about the sites to make conclusive determinations of their suitability.

The differences of opinion revolve around the appropriate degree of conservatism to use in making the assumptions that are necessary to fill in the gaps in our present understanding. DOE almost invariably makes very optimistic assumptions. Consequently, DOE's conclusion is that all the sites appear to be excellent. The States and tribes are more critical. They ascribe more weight to the existing negative factors and conclude that there is a good likelihood that the sites would not be found suitable.

The NRC, whose ultimate responsibility it will be to determine whether the sites are suitable, takes a middle ground. They have identified many significant issues for all of the sites which must be resolved if they are to be found licensable. Significantly, the Commission's current presumption is that if these issues are not resolved, they could prevent licensing of the sites. In spite of this presumption, the Commission concludes that characterization of the three recommended sites should proceed. Characterization is necessary, they say, to resolve these issues.

We disagree with the NRC about the implications of what is now known. The Commission supports characterization of the recommended sites in spite of their potentially disqualifying issues, to attempt to resolve those issues. We hold a more conservative view that the apparent adverse conditions at the sites are serious enough to dictate their elimination from consideration.

A conservative program with a comprehensive national screening using selective siting guidelines could have identified numerous sites which the Commission could have endorsed more enthusiastically. Instead of having to say that significant issues could disqualify any of the sites, NRC should be able to say that it cannot identify any issues that would prevent licensing of the recommended sites. Sites could be found that could satisfy these conditions. Such sites might be in basalt or granite, but they would not be in extremely complex geohydrologic settings with flowing ground water adjacent to major rivers. They might be in salt beds, but they would not be under important aquifers in prime farm land, or adjacent to pristine national parks. They might be in salt domes, but they would not be directly beneath towns. They might be in unsaturated tuff or other unsaturated rocks, but they would probably not be closely surrounded by potentially active earthquake faults.

The sites that DOE had picked even before the Nuclear Waste Policy Act was passed have all of these problems and more. DOE looks at these sites and sees no significant problems. The NRC is also optimistic, although less so than DOE. The Commission looks at these sites and sees some significant problems, but concludes that they should be characterized to resolve the problems. We look at the sites, see the same problems, and conclude that these are far from the best sites that could be found. Since we could obviously do much better, we should do so.

Which approach should Congress accept? If public confidence in and acceptance of nuclear waste disposal are crucial to its success, as Congress declared in the Nuclear Waste Policy Act, then clearly Congress should adopt the conservative approach of the States and tribes. The reason for this is simple. The people do not share DOE's optimism about this enterprise. Environmental tragedies in the news have made the people as a whole very skeptical about the ability of our institutions to safely manage and dispose of hazardous materials. Because of its skepticism, the public will not accept nuclear waste disposal unless it is convinced that this activity is being carried out as carefully as possible.

The people of the Yakima Indian Nation and the public as a whole want assurance that the Federal Government is truly working to find the best possible sites to dispose of these materials. What they see instead is a program that refuses to accept the need for conservatism and which obviously could have come up with a much better slate of sites. They see sites that are selected because the Government already owns them rather than because of their favorable geologic characteristics. They see that those sites have many common- sense problems, like flowing ground water, nearby rivers, valuable aquifers, and earthquake faults. They see the DOE doing a comparative evaluation of the sites, then choosing for characterization the one site, Hanford, that ranks distant last place for virtually all considerations. They see excessive optimism in all of the assumptions.

All of this cumulative non-conservatism effectively destroys public confidence that this program is being implemented adequately. The advantages of a conservative approach hold true even if the scientific optimists are correct in their assertions that there are no significant technical impediments to successful waste disposal, but rather only perceptual or political impediments. Even if perceptions are the only real problem, the Government and industry cannot alleviate the perception that nuclear waste disposal is unsafe by simply asserting the contrary and always making the most optimistic assumptions. Indeed, such a course only worsens public skepticism. Many observers who were initially willing to give DOE the benefit of the doubt have, after observing the program, become vigorous opponents of the Department's implementation of it.

In conclusion, the opposition of tribal and State governments to the nuclear waste program is simply a reflection of the views and concerns of their people. So long as the people see a program that is based on excessive optimism which they do not share, and that rejects the need to try to find sites for repositories that are among the best that can be found, they will not accept the program as safe. Consequently, the tribal and State governments will reflect that skeptical attitude and it will be very difficult for the program to succeed.

That concludes my oral remarks, Mr. Chairman. I am willing to attempt to answer any questions.

Senator BREAUX. Well, let me thank all of you for being here on behalf of the tribes that you represent. I think you have all spoken well to their concerns.

I was more concerned, Mr. Jim, about the comments in your statement about the lack of consultation and cooperation between the Department and your people. You're not satisfied with it. You say they've really made a mockery of it. Are they not, as they have indicated when they have testified, trying to work with the various groups to answer some of your concerns? Apparently they're not in your case.

Mr. JIM. Mr. Chairman, I would have to—and I'm sure others in this room could also relate the entire history—I was involved in this since 1978, and I realized when the utilities testify that in 1980 Mr. Johnston from Louisiana was also instrumental in passing a bill which we opposed in light of the fact that we wanted a Nuclear Waste Policy Act. But, lo and behold, in our contribution to the parent legislation we have seen that act come to fruition, even though the bill was passed in a lame duck Congress.

The flaw started in 1984 when the guidelines were submitted on December 9th. Two weeks later, the draft environmental assessments came out. The DEA's were supposed to be based upon the standards of the guidelines, but there is no way you can convince me and others that in two weeks they based those DEA's on the standards of the guidelines.

Then, also in 1984, Mr. Rusche said the preliminary termination of the site selection process would be done after site characterization. A year later he reversed his statement. He reversed 180 degrees and said the preliminary determination would be done before site characterization, and many of us suspect that was to keep Hanford in the running. As we have scientists that have tried to cooperate under the standards put forth by the grant monies and the limitations of the monies that we have been given, and to look at the models and the codes implemented by either the Department of Energy or their contractors, we haven't had all the success in the world in trying to find exactly what types of criteria and scientific methods they are using.

So the question remains, is the Hanford site picked for its suitability, even though—as we hear you say, well, isn't that what site characterization is supposed to do? I guess the——

Senator BREAUX. Well, what's the situation? Hanford already has a lot of waste that's being generated from the plant there that's being kept on-site right now. Wouldn't it be better to have a site that has gone through all of these tests, assuming that the Hanford site would be the ultimate recommendation—and no one knows that—but wouldn't you feel safer knowing that it had gone through all of these tests and that a permanent site would have been constructed to the best standards that we have, rather than have what we have now in your area, which is material being stored temporarily, but it's been there for a long time and it's going to be there until we come up with a decision here?

Mr. JIM. I would have to digress again in regard to the assumption that Hanford was going to be characterized around the early 1980's when they moved this large drill in there. And then when they started to drill, against Federal environmental laws, they were stopped by a suit. And now, in the pre-exploratory shaft studies that are going on now, they are requesting—without allowing the tribes or the States to come in and be in on the decision-making process—they said they want to drill 600 feet through the sediment down to the basalt. But they have already promised, and it is under the law, that first a hydrological baseline should be established. They have not established that hydrological baseline. They have come to us recently and said, "We're going to drill," and we said, "That would be against the law." They said, "Well, we're only going to drill through the sediment and down to the basalt, and we will not consider it a shaft." If they don't consider that a shaft, I wouldn't want to step in it.

So it is issues like this that make it very difficult to be in on any of the decision-making process. And as an affected party under the Nuclear Waste Policy Act and as a Government, the tribes and the States have the right under the law to participate in the decision-making process.

Senator BREAUX. Well, I appreciate your traveling so far to be here. I have worked with many of the tribes in your area on a number of issues in the past, particularly dealing with fishing rights in the Columbia River and the salmon treaties and all of the fishing treaties that we have, and I have always been very, very impressed with the manner in which you have presented your testimony. I think today has been in keeping with that fine tradition, and we thank you for being here. I think you have been very helpful. It's not an easy decision that we have to make, but it's one that we're going to have to go ahead and make a decision on in the not-too-distant future. We will certainly continue to work with all of you in reaching that point.

Mr. JIM. We thank you, and we also submit to you that we are willing to work with you in any way possible to find a suitable site in this country for the nuclear waste that has been generated.

Senator BREAUX. Mr. Burke, you had a comment?

Mr. BURKE. Yes, Chairman Breaux. I would like to say that your conception of a better place than what we have now — I would like to refer to your previous remarks about the number of MRS's that are around the country now, 110, about. I agree with you 100 percent there, but by the same token don't you feel that for equity's sake, that most of those 110 MRS's as they exist today are in the eastern portion of the United States? And why not consider those crystalline sites as a possible first-round repository site?

That's about all I have to say. Thank you.

Senator BREAUX. That's a good point.

Gentlemen, we thank all of you.

This panel will be excused, as we welcome up our next group, the final group this afternoon, consisting of Ms. Caroline Petti, Coordinator, National Nuclear Waste Task Force here in Washington; Ms. Bonnie Titcombe, Citizens Against Nuclear Trash, State of Maine; and Mr. Bob Fulkerson, Citizen Alert, State of Nevada, accompanied by Mr. Leon Lowery of the Tennessee Valley Energy Coalition.

We welcome all of you. Ms. Petti, we have you listed first, if you would like to go ahead and present your testimony.

STATEMENT OF CAROLINE PETTI, COORDINATOR, NATIONAL NUCLEAR WASTE TASK FORCE, WASHINGTON, DC

Ms. PETTI. Thank you very much, Mr. Chairman, and I appreciate your perseverance today.

I am here on behalf of the National Nuclear Waste Task Force. The National Task Force is a coalition of citizens' organizations from States affected by the Department of Energy's nuclear waste repository programs and MRS program. Accompanying me today are Bob Fulkerson from Nevada, a first repository State; Bonnie Titcombe from Maine, a second repository State; and Leon Lowery from Tennessee, site of DOE's proposed MRS facility.

The National Task Force was formed in response to concerns that were shared by all the member groups regarding DOE administration of the Federal nuclear waste program. We believe there are fundamental problems with DOE's overall nuclear waste management and decision-making. We believe that most of these problems can be traced back to DOE's untoward emphasis on meeting the 1998 date for Federal waste acceptance.

Again and again we have seen DOE subvert program quality, program safety, and certainly credibility in favor of expediency. We've seen political considerations preside over scientific ones in the siting process for these facilities. We've seen the selection of first and second repository States which even at this stage look to be, perhaps, technically unfit for that purpose. We've seen improper and inadequate consultation and cooperation with the affected States and tribes. And now that the repository program is getting bogged down in legal and political delay, we are seeing a last-ditch attempt by DOE to bring an unnecessary monitored retrievable storage facility on line to meet the 1998 date.

This overriding deference to schedule is what has brought this program to the brink of collapse, and the irony of it is that there is no compelling health and safety reason for the rush to judgment. There is no reason why waste can't continue to be stored at reactors until safe nuclear waste disposal systems are developed and well-sited.

It is time for Congress to take action to restore the credibility and soundness of DOE's waste management programs. The National Nuclear Waste Task Force would advocate that the following steps be taken.

First, we must bring a halt to DOE's flawed repository programs. We feel that no funds ought to be appropriated for siting activities in any of these programs, and that includes activities such as land acquisition, site characterization, and area characterization in first and second repository States.

Second, we feel Congress ought to disapprove DOE's proposal to develop a monitored retrievable storage facility. MRS is not a suitable alternative to either the geologic repository program or at-reactor interim storage.

Third, we feel Congress ought to establish an independent commission to review DOE's repository and MRS programs. Such a review undertaken by this kind of commission would investigate the technical and institutional adequacy of these programs and make recommendations on how best to proceed.

Lastly, we feel that funding ought to be increased for development of at-reactor waste management technologies, including but not necessarily limited to dry storage technologies. Obviously, nuclear utilities must continue to rely on at-reactor storage while a sound geologic or alternative waste disposal system is being developed.

We would urge Members of Congress, from affected States and otherwise, not to fall sway to DOE's "divide and conquer" strategies, but instead to work together and use their collective influence to get this program back on track and back on a sound technical footing.

Thank you very much.

Senator **Breaux**. Does anyone else have statements, or are you speaking for all of them?

Ms. **Petti**. Yes, Bob Fulkerson and Bonnie Titcombe.

STATEMENT OF BOB FULKERSON, CITIZEN ALERT, STATE OF NEVADA, ACCOMPANIED BY LEON LOWERY, TENNESSEE VALLEY ENERGY COALITION

Mr. **Fulkerson**. Thank you. My name is Bob Fulkerson; I'm the Executive Director of Citizen Alert.

Citizen Alert is a State-wide membership organization that was founded in 1975 in response to citizen concerns about a Federal proposal for high-level nuclear waste storage at the Nevada test site. Since then, the technical adequacy of Yucca Mountain has been under attack by a variety of scientific quarters. These concerns primarily center on the fact that the area is an area of very active geology, with the potential for seismic and volcanic activity in the future.

We feel that the Department has ignored these questions of safety and of geologic stability. Just one example is in the draft environmental assessment. We are told, and even shown diagrams, that Yucca Mountain lies in or is near an earthquake zone, depending on where one draws the lines, but the conclusion has been drawn by the Department that the likelihood of disturbance in the future is not great enough to worry about.

As far back as 1979 the National Academy of Sciences warned us about the stability of tuff as a geologic medium for nuclear waste disposal. Again, seismic and volcanic stability were major concerns. There is a significant and a growing body of evidence that indicates earthquake activity could occur within the lifetime of the repository, with resulting radioactive contamination of land and water.

Other technical concerns include the geohydrology, the ground water travel time. The Department of Energy has estimated that the ground water travel time from the repository to the accessible environment to be around 20,000 to 50,000 years. The independent Desert Research Institute has calculated that it could be as fast as 900 years. The Nuclear Regulatory Commission in their comments on the Yucca Mountain EA had this to say about the geohydrological calculations of the Department: "Many assumptions, hypotheses and approaches used in the analysis did not incorporate uncertainties associated with available data. "There is also a potential for geothermal activity at Yucca Mountain based on the discovery of calcite silica deposits. Geothermal activity could produce a brine which could, in time, disintegrate the canisters.

One of the unique features of Yucca Mountain, as has been mentioned, is the presence of a nearby "atomic energy defense installation" the Nevada Test Site. The guidelines state that if there are irreconcilable differences between the repository and Atomic Energy Defense activities, that it should be disqualified. There is only one spot in the whole country where we can assure that ground motion will occur with absolute certainty, at least for the short term. So what's the next logical step? Put a nuclear waste repository right next to it.

The USGS studies, as Mr. Loux indicated earlier, have shown that nuclear explosions have already induced tectonic strain on faults in the area. The Department's response has been, "Well, we can engineer those problems. We can take care of those problems through engineering and through coordination of repository and test site schedules."

Well, the Department's record of predicting the reaction of the geology to the nuclear weapons tests has not been good. February 15th, 1984, 1,100 feet below Ranier Mesa, which is also on volcanic tuff, about three hours after that test there was a subsidence crater; 14 people were injured, one fatally. On April 10th of last year, with the Mighty Oak test, heat and radiation leaked past containment doors, destroying about $35 million worth of diagnostic equipment and resulting in the worst off-site radiation release since the infamous Bainberry Test in 1970 sent a 10,000-foot mushroom cloud into the air and carried radioactivity as far away as Canada.

The data that is being collected at Yucca Mountain is also under question right now. In April of last year, the USGS had a "stop work" order slapped on it because they were operating in the absence of a quality assurance program. This was precipitated by a scientist in Los Alamos asking the core library in Denver to verify a sample that he had been studying. The core library in Denver said no, we cannot guarantee that the sample you have is indeed the one that we have said it was. And it was found that the core samples taken from Yucca Mountain had essentially been tossed in the back of the truck without any effort being made to catalog those to keep track of them. In fact, even the General Accounting Office has said that there could be licensing problems when it comes down to that, associated with the reliability of the data on the core samples.

This, combined with the technical pitfalls of Yucca Mountain, indicates that the Department is going to have an extremely difficult time bearing the burden of proof during licensing it should come as no surprise to people that the result of a technically-flawed program is a technically-flawed site. It was about 26 years ago that Nevadans heard much the same thing about above-ground nuclear weapons tests from the Atomic Energy Commission that we are now hearing from the Department of Energy about nuclear waste disposal, and that can be summed up in two words, "trust us." The above-ground testing in Nevada has resulted in downwind communities with terrific high cancer rates and early deaths, not to mention the thousands of servicemen and workers who were also exposed.

The assumption about Nevadans being willing to allow the Federal Government to begin and then continue this next nuclear gamble is dead wrong. The implications of becoming the world's largest nuclear waste dump have resulted in unprecedented outcry. In fact, the latest State-wide poll has revealed that 79 percent of Nevadans feel the State should do everything in its power to prevent the locating of a high-level nuclear waste dump in Nevada, and there have been several governmental and civic organizations that have passed resolutions of opposition, including the PTA, the League of Cities, the Commission on Tourism, the Las Vegas and Reno City Councils, and other governmental bodies.

In addition to those groups, the Western Shoshone Nation claims about two-thirds of the State of Nevada based on an unextinguished treaty called the Treaty of Ruby Valley, and it's their firm position that the waste dump will not be tolerated on Western Shoshone land.

I want to briefly go over the significance of the budget cuts last year. Nevadans were elated with the hold that was put on the exploratory shaft drilling. We felt that the noose had been loosened around our necks, and had Congress not acted then we could have wasted a lot more money investigating a technically-unsuitable site. In fact, if that cut hadn't gone through, the drill rigs would be cranking away at Yucca Mountain right now.

It's clear that the current program will lead to an unsafe repository which could create catastrophic consequences. It is also clear that the importance of working together to address this issue cannot be underscored enough. That's why Citizen Alert is promoting and endorsing the four-point program which Ms. Petti just outlined by the National Nuclear Waste Task Force.

I'd like to thank you for this opportunity to speak.

Senator **Breaux**. Thank you, Mr. Fulkerson.

Ms. Titcombe?

STATEMENT OF BONNIE TITCOMBE, CITIZENS AGAINST NUCLEAR TRASH, STATE OF MAINE

Ms. **Titcombe**. Yes. Thank you also, very much.

I think that if there's one thing we can all agree on this afternoon it is that there is a very serious problem on our hands and that something has to be done. But I think we also have to realize that in the doing, we have to do something that is legitimate and long-term.

As a Nobel laureate once said on this subject, if a problem is too difficult to solve, one cannot claim that it is solved by pointing to all the efforts made to solve it.

I think the first thing I would like to speak about is a rather unique position that I feel that I'm in along with a number of the second round States. I think that many Members of Congress would think that the people in the second round States were maintaining a NIMBY attitude when, in fact, that is about as far from the truth as you could get. I think that the essence of the way that the citizens in the second round States are feeling is that we have got to guarantee that whatever program we finally embark upon is going to be one of excellence, and it has appeared very clear to those I have spoken to in the State, my own personal experience in Maine and outside of Maine, in Texas, that the DOE is not maintaining that excellence that we're looking for.

American citizens, I believe, are extremely distressed by the whole program. I know that the people in Maine are extremely distressed by the program. We have gone through now about a year and several months of dealing with something that came down on us in Maine like a very cold, dark blanket, something that we're really not accustomed to in any way.

I think the things we have to look at now, at least for myself and I hope I could have you listen to and really hear, is what the citizens of this country have been going through. Throughout this whole conversation I've heard a lot of technical evidence. What I haven't really been hearing is what I think everyone is feeling, and I think that's real important for Congress to understand.

First of all, DOE's procedure in Maine, I believe, was much a reflection of what took place in the first round States and the MRS, and that is that they have absolutely irreparably damaged their reputation. I do not believe that the reputation of the DOE is salvageable in the State of Maine. They actually became a laughing stock during the DOE hearings and briefings. A number of things took place.

I heard today talks about technical responsibility. I did not see technical responsibility on the part of the Department of Energy. I saw exactly the opposite of that, and this happened over and over and over again. Again, I cannot speak to the original briefings and hearings in the west. I have attended one, and I saw that same level of irresponsibility evident there.

I'd like to point out a few things that took place in the State of Maine upon which perhaps you can make reference.

I think you are at a disadvantage because most of you were not there, and it's easy for us to come in and tell you second-hand what took place. I'm sure that that's imperative for you to understand, but I think that you should also understand on the general citizens' level. When the Department of Energy first came to Maine, I was one of the citizens who was there at the first press conference to confront them, in the beginning, on how much land they would intend to take. In the very beginning that land was listed at somewhere around 5,000 acres. Knowing that that was not exactly what was the truth, I continued to ask the same representative of the DOE in the presence of other members, in front of the television cameras, over and over again what that amount would be. We went from 5,000 acres to 7,000 acres to 11,000 acres to 20,000 acres, finally, within a half hour period of time. At the next DOE briefing we went through the whole procedure all over again, only this time we got up somewhere around 30,000 acres. The last statement that was made to the effective land amount was a television statement by a DOE representative, and at that point it was "at least" 30,000 acres. It is very difficult to ask for public confidence when this sort of deceptive half-truth is taking place.

The second point is, we found a fracture line that was listed in the DOE mappings, and it ended very mysteriously where many of our local geologists believed it did not end. And when we questioned the DOE as to why they had ended that fracture line where they did, it was because the college student who had done the research on that fracture line ran out of money at that point, and that is how they logged that fracture which we believe, through our State geologists, is a very significant fracture.

The third point is that nowhere was it mentioned that Sebago Lake—I don't know if you know about the sites in the Maine area, but one site upon which I live is the Sebago Lake batholith area. Sebago Lake is the drinking water supply for all of southern Maine, for well over 200,000 people. A major aquifer and watershed underlies that whole batholith area. It feeds not only the Saco River, which is a water supply, but Sebago Lake, which is a water supply, which is approximately 45 miles around. Not only were four major aquifers left out of the DOE studies, including the Poland Spring aquifer—I'm sure you've heard of Poland Spring Water—somehow, that mysteriously disappeared. And when we confronted the Department of Energy as to why they had left these out, their public statement was, "We did not have aquifer maps for the other sites; therefore we felt it would be unfair to include yours." That does not breed confidence.

The next point is that population figures were consistently off on all of their population figures. They were off in many cases by several hundred. That may not seem particularly important, but when you're looking at square miles and population as a disqualifier, it is extremely important. Our summer population, which is 10 times more than the year-round population, was never even considered. The tourist trade is the number one industry in the State of Maine. I think it would be particularly significant to include in that study our population figures for the summer.

There was no growth rate considered. The Sebago Lake area is the fastest-growing area in the State of Maine. In one town alone it was stated by the Department of Energy in writing that no new homes have been built in a five-year period of time. Now, my husband was a contractor at that time, and I know of at least a dozen areas that he personally developed. That sort of irresponsibility does not breed confidence.

When I was in Texas I questioned the DOE on transportation figures, referring in truckloads how much we could expect for waste to come in. The statement was, "approximately three loads a week." If you will look at the DOE figures you will figure that it's about one every 90 minutes.

There were people in Maine who could not testify. At our first briefing at the Lake Region High School there were 3,500 people inside the building. There were thousands outside the door who could not get in. There were cars lined up almost all the way to Portland, which was 10 or 12 miles. You could not pass on Route 302. In fact, at one point the Department of Energy was so concerned that they asked the National Guard to have guard dogs so that if they needed them at the school, which they did not, they would be available.

When we started to register for hearings we went through a hassle to the point where we threatened to go to court if people were not given the opportunity to testify. We were given—we had to register either by telephone or in writing, and if we registered by telephone then we were not guaranteed a place to speak. This is not public cooperation and participation.

Both sites in Maine are intimately involved with water supplies. The northern site is on the Indian reservation of the Passamaquoddy and Penobscot Indians. It is called Bottle Lake, so I needn't tell you about the water around it. The other is the Sebago Lake batholith. I don't know what it is about lakes, but it appears DOE is particularly fond of choosing sites near water.

It was evident to our State Geologist that with the radon problem that is presently in existence in Maine, that just the mere operation of the mining would contaminate the water supply that supplies water to all of southern Maine. Yet again, DOE assurances were, "trust us, we're not going to let this happen," when it's been very clear that from past precedent it has almost always happened.

We were given 90 days to defend ourselves. The State asked about draft area recommendation reports and mission plans. On February 10th, at our first major briefing, the Maine State Library had never seen one, nor had local colleges and universities. We could find two screening methodology documents in the entire State. The Code of Federal Regulations did not arrive until after the briefing.

We had doctors that got up and talked about psychological damage, damage that we in Maine probably could not even begin to assess for what would take place in the rest of the country ours was—at least, until now—a rather short-lived period of months of terror. It is obvious that the first and the second round and the MRS facilities, the proposed sites, have been through this same type of thing.

Section 3(a)(6) speaks of public confidence and cooperation being essential to the program. If the law states that and intends to back it up, then this program cannot continue because there is no public confidence in the Department of Energy. I listened to them talk this morning, and it was like an agency I had never worked with. Some of the people I had worked with, I became very good friends with; very nice individual people, but I have absolutely no confidence in the program itself from what I have seen.

I believe the people are angry and they are very fearful, and I believe that the Department of Energy's integrity is beyond repair.

I have in my presence an interoffice memo from the Department of Energy where it is recommended that Department of Energy utilize "level 2 word language"—in other words, "such as double negatives; never conclude anything." And this is the sort of thing that we ran into all the time.

As an organization speaking for the second round States, we endorse fully the National Nuclear Waste Task Force principles. We believe that many errors have been made, and we believe that to deny them would be to promote more distrust. To evaluate them and seek a sound direction would be hailed. All I could think of when I think of the DOE is the fox guarding the henhouse, and I think it's time for integrity. Thank you.

Senator **Breaux**. Well, I think all of you have made a very clear point of your distrust of what DOE has done.

What would you recommend that Congress do?

Ms. **Petti**. The position of the National Nuclear Waste Task Force is basically twofold. One, we feel that a temporary pause in siting activities is necessary in all of DOE's program areas, first repository, second repository and MRS, on the grounds that enough improprieties have emerged with regard to DOE's implementation of its responsibilities under law in each of those program areas that a temporary pause is warranted.

Secondly, while a temporary pause is in effect, that, Congress establish an independent commission whose purpose would be to review the problems which have emerged in DOE's implementation of the Act, the technical problems which may or may not exist in the implementation, political problems, institutional problems. And at the end of that review, make recommendations back to the Congress as to how to get the program back on track and back on a successful course.

Senator BREAUX. So that leaves us with 100-plus temporary sites where we're storing the stuff right now. Is that a satisfactory risk to run the risk of?

Ms. PETTI. Temporarily, yes. Even——

Senator BREAUX. How long is temporary? You're not talking in terms of weeks; you're talking in terms, probably, of decades.

Ms. PETTI. The Nuclear Regulatory Commission, in their waste confidence proceeding, determined that waste could be safely stored on site for at least 30 years beyond reactor decommissioning, so that's 50-some-odd years that waste can be stored in spent fuel pools. And that's not assuming dry cask storage technologies being available. Waste can be stored on site while we run a sound geologic program or look to other disposal alternatives that may be preferable.

Senator BREAUX. You recommend an independent commission. Is that not what the Nuclear Regulatory Commission is, which ultimately has to license it?

Ms. TITCOMBE. May I address a couple of things that you've just brought up?

Senator BREAUX. Sure.

Ms. TITCOMBE. First of all, we would recommend an independent commission that would include members whose primary responsibility was health and safety of people and the environment.

Senator BREAUX. Well, let me go back to my point. Isn't that what the NRC is charged with, taking that recommendation and looking at it from a health and safety standpoint?

Ms. TITCOMBE. Well, I would expect, from what we have seen from performance, that if the NRC is in the position to watchdog the DOE, then they have done a very poor job of it.

Senator BREAUX. Yes, but you're criticizing their decision. We already have an institution which is an independent commission, created by Congress, charged with just what you're telling me we ought to create a commission to do. What you're saying is you don't like their recommendation, but we've already got an NRC. Under the setup where it was created as a relatively independent commission, it was charged with the human health and safety and the environment being protected. We have in place what you're saying we need. You might not like who's on there; you might not like their decisions, but we've already got that agency.

Ms. TITCOMBE. But an agency is only as good as how effective it is. And thus far it's not that we don't like them personally; we do not like what the Department of Energy has been free to do.

Senator **Breaux**. Well, they're not free. After they make their whole process and after we go through a 5- to 7-year period of doing site investigations on the three sites, then someone has to apply for a license. And they apply for a license to the independent commission which evaluates that recommendation to see whether it's safe or not. We have in place what I think you're advocating. What you're saying is that you don't like how we got there, but you can't argue that we don't have an independent commission that looks after health and safety. That's what we did when we set up the NRC. That object or that creation is already there.

Ms. **Petti**. The NRC has not been involved in reviewing the site selection process——

Senator **Breaux**. I don't want to be argumentative, but they make the final decision on this whole process. After we get to that point somewhere down the line 10 years from now, after we've studied the sites, after they've drilled the holes, after they've done the environmental assessments, after they've applied all the tests as to which one is the best, a recommendation is made by DOE. They don't make the decision. They make a recommendation. That recommendation has to be evaluated by an independent commission, an independent commission that is charged with protecting the human health and safety and the environment of this country, and then they make the decision.

That's what you're telling me that we ought to set up. I would just submit that it's already set up like that.

Ms. **Titcombe**. May I add that I think what we have to look at in the long run, whenever this might take place, is the very best and safest means of storing this waste. If we now have an agency that appears to be doing a very irresponsible job in coming up with the semifinalists, it doesn't make any difference who does the final picking. The fact is that those candidates who are being considered may not be chosen for their true qualities. It may be a political move. It may be irresponsible. Would we not be better now to evaluate the finalists or the candidate States than to wait until we get down to three, when all three could be unsound?

Senator **Breaux**. If we picked before we went through all the studies that are on the board, I guarantee you that you or someone representing the very legitimate feelings that you have would be arguing that it's going to fast, that we have moved too quickly, that we haven't given enough detailed attention to a system that ultimately selects the very best after eliminating those in that process.

We have a process that is going to take over a decade because we want to be careful with what the final conclusion is. We have the final decision being made by an independent agency of this Government, which is charged with the health and safety and protection of the environment. We have in place what I think you're recommending to me. You are arguing about the fact that it's not working, but you can't argue that it's not there. We don't make the decision; I mean, the DOE does not make the decision on where the repository is going to be. An independent agency of the Government makes that decision.

Ms. **Petti**. The NRC may or may not pass judgment——

Senator **Breaux**. Eventually they have to give the license or not give the license.

Ms. PETTI [continuing]. The technical adequacy of the sites in question, and they may or may not agree that they are technically adequate.

Senator BREAUX. Based on what's best to protect the human health and safety.

Ms. PETTI. The NRC will not pass judgment on the other things about this program that the Congress, in enacting the Nuclear Waste Policy Act, felt were absolutely essential to the successful establishment of a repository facility, things like program credibility; things like the institutional relationship the DOE was to have with the affected States and tribes. These are things that have suffered as a result of DOE's aggressive emphasis on meeting the schedule.

Senator BREAUX. I'm not arguing with that. The only point I'm trying to make is that they don't make the decision. The final decision is made when they request a license, and that decision is to be made under the current law by an independent agency set up by the Government with one mission, to protect the human health and safety and the environment of this country. We can complain about DOE all the time. They don't make the licensing decision. You're recommending that an independent agency be set up, and I'm just pointing out that one already is set up. We can argue about whether they're doing their duty properly, but I don't think there's any argument that we have in place an independent agency that ultimately makes the decision.

Yes, ma'am?

Ms. TITCOMBE. I was just going to ask you where they've been for the last decade as the DOE has been running rampant.

Senator BREAUX. We have intentionally given them the final decision after all the plans and preparations have been made, to look at the final recommendation. They're the ones that call the final shot. And I would not say that we should rush to that decision, and a decision that is going to take a decade, I think, is not a rush to a final determination and a rush to judgment.

Mr. LOWERY. Mr. Chairman, if I may, I think the point that the NRC is an independent commission maybe confuses what's at question here. The warrant of the review commission of which we speak does not necessarily—is not restricted to health and safety and technical questions, but to the policy system decisions that are made under the act as to how the Department of Energy has fulfilled the mission that Congress laid out for them in the Nuclear Waste Policy Act. And it's my perception and the perception of many people, in Congress and out, that there is strong feeling here in Washington that that warrant has not been lived up to——

Senator BREAUX. Well, that's why we're having the hearing, to find out whether they are doing what Congress intended them to do. That's why we're having this hearing. That's why I'm sitting here all day listening to the people who are complaining about this because I want to see if, in fact, they are carrying out the law. And if Congress feels they are carrying it out and you don't, you have another avenue. Another avenue is the courts, to say, "Look, they're not even following the law." Lawsuits have been filed; they've been sued up and down the line. Maybe a court somewhere in some vicinity will say that they are not following the law, and we're going to see to it that they do.

So you've got two shots. One is Congress, to change the law if they're not doing what we thought they should do, and secondly, the courts if they're not following it, also.

Mr. LOWERY. At this point we're taking that first shot. We're asking Congress, and many people within Congress are also asking Congress, to do just exactly that, to evaluate whether the Department has lived up to the institutional and policy decisions warranted to them in the Nuclear Waste Policy Act.

Senator BREAUX. Okay.

Well, that's really all the questions I have. The interchange, has been good and helpful. The feelings obviously are very intense. The recommendations certainly show that, and I for one am not going to take your statements lightly. I think they raise some very good points which we're going to be following up, particularly with DOE, on to see that they're doing at the very least what Congress intended that they do. If they don't, we'll change the law.

I appreciate you all waiting and being on the panel. I certainly think it has been very, very helpful.

This will conclude today's of hearing. We have additional hearings scheduled. Tomorrow's hearing will be at 10:30, and it will be on transportation issues.

With that, the subcommittee will be in recess until tomorrow at 10:30.

[Whereupon at 4:30 p.m., the subcommittee recessed, to reconvene at 10:30 Wednesday, June 3, 1987.]

[Statements submitted for the record follow:]

STATEMENT OF

BEN C. RUSCHE
DIRECTOR
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

U. S. DEPARTMENT OF ENERGY

BEFORE THE

SUBCOMMITTEE ON NUCLEAR REGULATION
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

JUNE 2, 1987

Mr. Chairman and Members of the Subcommittee:

I appreciate the opportunity to appear before you today to discuss activities related to site characterization of candidate sites for the Nation's first geologic repository for spent nuclear fuel and high-level radioactive waste.

I will focus my testimony on site characterization plans, the strategy for resolving technical issues raised by the Nuclear Regulatory Commission (NRC) during site characterization, plans for interacting with the National Academy of Sciences during site characterization and our strategy for assuring technical excellence through each step.

On May 28, 1986, the President approved the Secretary of Energy's recommendation of three sites for characterization as candidates for the Nation's first geologic repository for spent fuel and high-level waste. The three sites are: the Yucca Mountain site in Nevada, the Deaf Smith County site in Texas and the Hanford site in the State of Washington.

This was a major milestone in implementation of the Nuclear Waste Policy Act of 1982 (NWPA) and marked the beginning of the site characterization phase. Reaching this stage of determination permits us to proceed to investigate thoroughly, evaluate and compare geologic, environmental, transportation and safety factors at each of the three sites.

Prior to the nomination and recommendation of sites for characterization and through extensive field studies and analysis of tens of thousands of pages of documentation, DOE determined that all of the 9 potentially acceptable sites formally identified in February 1983 were qualified for further study based on the siting guidelines developed and concurred in by the Nuclear Regulatory Commission (NRC).

The selection of sites for nomination and recommendation was borne out of an extensive technical effort through which draft environmental assessments were prepared on each of the 9 potentially acceptable sites to analyze and evaluate available data relevant to the suitability of sites. A subsequent analysis entitled, Multiattribute Utility Analysis of Sites Nominated for Characterization for the First Radioactive Waste Repository -- A Decision-Aiding Methodology (DOE/RW-0074), was developed and finalized by DOE to aid in gaining insight into the attributes of the five nominated sites. The suitability and application of this methodology was reviewed and commented on by the National Academy of Sciences.

The decision-aiding methodology was a refinement of one of several methods proposed in the draft environmental assessments in 1984. It utilized the data and analyses in the environmental assessments in a decision process that allowed disaggregation of a complex set of objectives into component parts for evaluation and then reaggregation to determine both a composite ranking of the nominated sites and additional significant information relevant to determining an initial order of preference.

In addition, DOE considered the provisions in the siting guidelines for diversity of geohydrologic settings and diversity of rock types in arriving at a final order of preference. Based on these considerations, the Secretary determined that the set of three sites for recommendation as candidate sites for characterization consisted of those which he recommended to the President. In addition, pursuant to the requirements of Section 114(f) of the NWPA, the Secretary made a preliminary determination that those three sites are suitable for development as geologic repositories consistent with the siting guidelines.

NRC has subsequently provided comments on the site selections, but while numerous concerns have been identified by NRC staff relative to each site, their concerns are of the nature anticipated at any site for which the existing database is limited. Such concerns we believe can only be addressed through the characterization process which was wisely established by the NWPA. The process began formally with the President's decision of selection of sites.

The purpose of site characterization is to collect the extensive geologic and environmental data that are necessary to evaluate the suitability of a site for development as a repository; to develop site-specific designs both for a repository and for the waste package to be emplaced in the repository; to prepare an environmental impact statement; and to develop the information necessary for a construction authorization for a repository from NRC.

Site characterization will take five-to-seven years, depending on the site. It consists of surface-based field studies, construction of an exploratory shaft facility and the detailed tests conducted below surface in that facility.

Surface-based field studies involve data collection activities, such as geologic mapping, seismic surveys and hydrologic studies, as well as subsurface investigations conducted by deep and shallow boreholes that will be used for groundwater monitoring, core extraction, laboratory testing, and stratigraphic, tectonic, geochemical and geohydrologic studies.

Site characterization will also involve studies conducted in the candidate host rock in exploratory-shaft facilities. Exploratory shaft facilities provide access to detailed study of the potential host rock and will consist of:

(1) two exploratory shafts that will provide for access to the host rock, for the transport of people and equipment and for ventilation;

(2) underground testing areas; and,

(3) surface facilities needed to support construction and testing.

Exploratory shafts will be sunk to approximately the level where the underground facilities of a repository would be built -- 1,000 to 4,000 feet below surface depending on the site. At this level, the shafts will be connected to one another and to underground testing areas. The shafts and the underground testing areas will be used to conduct tests and make observations and measurements of site conditions. The surface-based tests will continue during the construction of exploratory shafts and will be continued in the exploratory shaft facility.

Although we had planned to begin exploratory shaft construction at one or two of the sites this fiscal year, Congress, in the appropriation for the waste program for Fiscal Year 1987, specified that no funds are to be used for drilling any exploratory shaft at any site in FY 1987. However, Congress did allow for site-specific work, other than exploratory shaft drilling, to be conducted at reduced funding levels.

The current activities at or related specifically to each of the candidate sites, include the following:

- o At the Nevada site, land access is being pursued with other Federal agencies.
- o At Washington, site plans are proceeding for hydrology tests that will begin prior to initiation of exploratory shaft drilling.
- o At the site in Texas, DOE is proceeding with its plans for obtaining access to the land, and has established an office of about 10 DOE and contractor personnel from our DOE Columbus, Ohio, Salt Office. Unlike the Nevada and Washington candidate sites, there has been no DOE office for this program located near the site or in the State.

Site Characterization Plans

Another major effort associated with site characterization is the preparation of a plan for characterizing each site. This plan--called a site characterization plan (SCP) is a major and intensive effort. The scope and magnitude of this effort can be gauged from the site-characterization plans now being prepared for publication: in each plan, the description of the characterization program alone covers several thousand pages.

Copies of each draft chapter are being shared with NRC, the States, and Indian Tribes as they become available.

The NWPA requires that such a plan for any candidate site be prepared, made available to the public, and that a public hearing be held by DOE in the vicinity of a candidate site before proceeding to sink the exploratory shafts at the site. The SCPs are key documents and of major importance to States, Indian Tribes and the public -- as well as to NRC and to us.

The SCPs will provide a thorough status of what is known about the sites, describe the conceptual designs for the repository and waste package, identify necessary additional information requirements and present plans for obtaining all such information that is needed to support siting, licensing and design. The DOE is currently engaged in an intensive effort of development and review of the SCPs for all three repository sites. This development is proceeding extremely well and is leading to extensive and high quality documents which carefully detail the logic for the data collection and evaluation procedures that will be needed to assure careful site characterization. The SCPs follow the Issues Hierarchy and issue resolution strategy approach briefly outlined in the Draft Mission Plan Amendment, (DOE/RW-0128), January, 1987, and covered in greater detail in the Issues Hierarchy, For A Mined Geologic Disposal System, (OGR/B-10), September 1986. The intensive effort underway will lead to issuance of the SCPs for the Nevada and Washington sites late this summer or early fall and for the Texas site early next year.

There is intense interest in the SCPs, because they will guide DOE during the site characterization phase until a license application is submitted to the Nuclear Regulatory Commission. The SCPs and periodic progress reports that DOE will be making, will have a crucial role in interactions with the NRC, and as vehicles for presenting information to the States, Indian Tribes, Congress, utilities and the public.

With regard to resolution of technical issues, the SCPs have been written using the SCP Annotated Outline (Annotated Outline for Site Characterization, Revision 1, OGR/B-5, March 1987) and the Issues Hierarchy in a manner to identify the issues and provide a rationale for their resolution. These issues are addressed in detail in the SCPs. While preparing the SCPs, DOE has met with NRC, States and Indian Tribes and reached agreement on the scope, content and approach being used for the SCP. In addition, a meeting was held with the NRC in May 1986, in which agreement was reached on the level of detail to provide in the SCPs.

To assure that critical issues are being addressed, a number of technical meetings with the NRC on selected topics have been held or are being planned for the near future. Meetings have been held with NRC, States and Indian Tribes to discuss the DOE Issues Hierarchy and performance allocation process, the geohydrology testing program for the Hanford site before construction of the exploratory shaft and proposed changes to the exploratory shaft facility at the Yucca Mountain site.

The technical issues raised appropriately by the NRC staff through their comments on the Environmental Assessments are being carefully and systematically considered by DOE in developing the issue resolution strategies contained in the SCPs.

Technical Issues raised by NRC

Resolution of specific technical issues raised by the NRC staff is expected to occur through a wide range of frequent interactions with NRC, the States and Indian Tribes. These will include review of Topical Study Plans, topical reports containing site data and results of design and performance analyses, meetings on topical issues, on site observation of testing and technical coordinating group meetings. In addition to ongoing interactions between the States and Indian Tribes, semiannual progress reports will be used to keep the NRC staff and others informed as to the status of DOE plans and progress being made during site characterization, including progress toward resolution of technical issues, and will act as a directory to all the various technical reports which will be issued during site characterization.

After issuance, the SCPs will be reviewed by the NRC staff and affected parties and public hearings will be held and comments requested. The NRC has also agreed informally to provide early comments of any exploratory-shaft related concerns; and, finally, NRC will provide detailed analysis and comment in their Site Characterization Analysis report which will represent a comprehensive statement of the technical issues of concern to NRC. The DOE is committed to consider all comments received and issue a comment response document.

DOE will report on its site characterization program through the semiannual progress reports. It is anticipated that meetings on difficult topical issues will be held frequently with NRC, States and Indian Tribes as data collection proceeds, and DOE expects that NRC will review and provide comments on topical reports and other material provided by DOE for technical meetings. DOE will consider all comments and will attempt to reach closure on technical issues throughout the period of site characterization. DOE will document closure on technical issues in the semiannual progress reports. DOE will assure that all interactions are of the highest technical quality and that input from all technical experts is carefully evaluated and that the public is kept informed of progress.

Interactions with Panels of the National Academy of Sciences

With regard to interactions with panels of the National Academy of Sciences (NAS) Board, the NAS Executive Commission recently approved and submitted to DOE a formal proposal to establish three site-specific panels to overview site characterization activities. DOE welcomes the opportunity to continue to receive the recommendations of the NAS. The DOE currently interacts with the NAS on topical issues, for example, The National Committee for Rock Mechanics, and will continue to encourage this interaction. We will be working closely with the NAS to assure that they have the information required to develop and implement their scope of work for their independent technical review. We will develop procedures in conjunction with the NAS that will assure that their appointed site-specific panels have timely and complete access to all plans and data available. We will also provide for routine meetings and briefings as requested by NAS on individual site-specific topical issues. NAS panel comments will be fully addressed as site characterization activities proceed.

Technical Excellence

Assuring technical excellence during all aspects of the site characterization process is the central focus of DOE's efforts.

DOE is preparing the SCPs using state-of-the art procedures, such as the Issues Hierarchy and performance allocation process, and issues resolution strategy. The SCPs are being prepared by technical experts who are being required to think through the complete rationale for the process leading to the need for specific data. These plans are being reviewed by a major DOE headquarters task force and by independent peer reviewers under a formal quality assurance process to assure the technical integrity of the test program. As discussed, these plans will undergo very extensive review by NRC, affected parties and others, and their comments will be evaluated and incorporated as appropriate.

The DOE plans to maintain this high level of review throughout the completion of study plans, test procedures, semiannual progress reports and laboratory, field and design activities. The procedures, summarized earlier, that we are putting in place, which include independent peer reviews within DOE, external peer reviews by NAS and frequent and extensive interaction with NRC, the States and Indian Tribes through meetings, technical coordinating groups and hearings, assure the technical excellence of the program through each step of the process. We are confident that the process we have in place will lead to the highest quality site characterization effort possible.

Mr. Chairman, this concludes my remarks. I would be happy to try to answer any specific questions you or members of the Subcommittee may have at this time.

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PREPARED TESTIMONY
SUBMITTED BY THE
UNITED STATES NUCLEAR REGULATORY COMMISSION

TO THE

SUBCOMMITTEE ON NUCLEAR REGULATION
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

CONCERNING
HIGH-LEVEL RADIOACTIVE WASTE

PRESENTED BY
HUGH L. THOMPSON, JR.
DIRECTOR, OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS

JUNE 2, 1987

I would like to thank you, Mr. Chairman, for this opportunity to provide the Nuclear Regulatory Commission's views on several matters related to the Department of Energy's civilian high-level radioactive waste program. I shall first address the NRC staff's comments on the Department of Energy's Final Environmental Assessments. Second, I would like to make some remarks about the Commission's comments to DOE on DOE's Draft Mission Plan Amendments. Third, I would like to discuss the DOE program in general and the interaction between DOE and the NRC staff. Finally, I shall briefly discuss our view of some of the technical issues of the disposal program which are of concern to potential host states and affected Indian tribes. I will be happy to respond to any questions that you or the other members of the Subcommittee have.

NRC Staff Comments on DOE's Final Environmental Assessments

NRC staff comments on DOE's five final Environmental Assessments (EA's) for potential repository sites were forwarded to DOE in our letter of December 22, 1986 after review by the Commission. As noted in the NRC forwarding letter, the NRC staff comments are part of the pre-licensing consultation between the staffs of the DOE and NRC. This pre-licensing consultation is intended to ensure early identification and resolution of potential licensing issues. The intent of our comments on the EA's was to assist the DOE in preparing high-quality Site Characterization Plans (SCP's) for each site. It was not our intent that the final EA's be modified or that the progress of the site investigation program be halted.

The NRC staff review of the EA's was limited to the specific responsibilities of NRC: public health and safety, and protection of the environment; and the waste isolation considerations found in 10 CFR Part 60, NRC regulations for "Disposal of High-Level Radioactive Waste in Geologic Repositories"; and related considerations in the DOE Siting Guidelines. In deciding whether to proceed with site characterization at each of the selected sites, DOE has considered other factors outside NRC's regulatory responsibility, such as cost and schedule, and the overall ranking of sites.

Our December 22, 1986 letter to DOE noted that DOE had made significant efforts to respond to each of the NRC staff's major comments on the draft EA's, and had resolved many of these comments. However, in each of the final EA's, the staff review identified some remaining concerns. These remaining concerns involved cases in which DOE had not: (1) identified the range of uncertainties associated with the limited existing data base; (2) identified the range of alternative interpretations and assumptions that can be reasonably supported by existing data; or (3) incorporated a reasonable range of uncertainties and alternative interpretations into evaluations and conclusions.

At this stage of the site investigation and screening process, there is inherent uncertainty in site information that can lead to alternative interpretations of data. Furthermore, resolution of uncertainties -- such as those identified in our comments -- can only be addressed through the site characterization process. To the extent necessary for demonstrating compliance with NRC regulations, site characterization testing should lead to narrowing the range of uncertainties, eliminating alternative interpretations and confirming or revising assumptions on the basis of new data and analyses. This narrowing process will not be effective unless test plans recognize the range of uncertainties and alternative interpretations and assumptions that can be reasonably supported by the existing data.

I should stress that the NRC staff's comments on the final EA's focused only on those concerns that we believed had not been sufficiently addressed to date in the final EA's. Our comments were not intended to be a catalogue of all our concerns at each site, nor were they intended to limit our ability to address additional concerns as they arise. If we did not mention a concern in our final EA comments, it was because we believed that DOE had adequately recognized in its final EA's the need to resolve that concern, not because we believed that the concern had been resolved and was no longer a potential issue for licensing.

NRC Comments on DOE's Draft Mission Plan Amendment

On April 7, 1987, the Commission sent DOE its comments on the Draft Mission Plan Amendment. The NRC recognized the necessarily broad nature of the document and anticipated that details would be published in other documents. DOE has made a significant commitment in the Draft Amendment by specifying six activities to make maximum use of the near-term extension of the schedule and to increase confidence that the Commission's review of the license application can be completed within the 36 months (extendable to 48 months) allotted for that review by the Nuclear Waste Policy Act. These six activities are:

1. Interactions with NRC on technical issues,
2. Development and operation of a licensing support system,
3. Implementation of, and interaction with NRC on, a quality-assurance program that will satisfy NRC requirements,
4. Implementation of the issue-resolution strategy, which is based on the performance-allocation process requested by NRC,
5. Provisions for greater involvement by the States and affected Indian tribes in the technical program, and
6. Implementation of a program of licensing topical reports, which will allow the NRC staff to consider specific issues before submittal of a license application.

The NRC staff will cooperate with the DOE in implementing these items and will report progress to the Commission periodically. The Commission has also asked DOE to address this topic in future briefings to the Commission.

The Draft Mission Plan Amendment includes language linking the schedule, for receipt of spent fuel at the Monitored Retrievable Storage (MRS) facility, to the NRC's issuance of a construction authorization for the repository. The basis, for the NRC's review of the license application for the repository, and the awarding of a construction authorization will be public health and safety, and protection of the environment, and will not include consideration related to the MRS schedule for receipt of spent fuel.

DOE Program and NRC-DOE Interaction

Our comments to DOE on the final environmental assessments sum up our overall view of DOE's technical activities. We believe there is no technical reason why site characterization should not continue. The high-level waste repository is a first-of-a-kind facility, involving complex, unique technical issues that can only be resolved througn a detailed site characterization program.

There has been a continuous overall improvement in the DOE program to develop an adequate data base, as demonstrated particularly by recognition in the final EA's of many of the NRC concerns on the draft EA's. The recent briefing, of the NRC staff and the affected states and tribes by the DOE, on its issues hierarchy and issue resolution strategy, laid out a logical and rigorous way of identifying issues and the data needed to resolve them. How the DOE implements the issue resolution strategy is the key, to whether it is heading in the right direction; NRC staff review of the SCP's will assess progress in this area. One early indication that the DOE is progressing in this area, is its recognition of the need to conduct key hydrologic testing at the Basalt Waste Isolation Project (BWIP) site, prior to construction of the exploratory shaft. I will now discuss this in more detail.

Our December 22, 1986 letter to DOE noted, that improvement in the technical interactions between the NRC and DOE staffs was necessary, to ensure that NRC staff concerns are being addressed in the development of DOE's site characterization plans. We suggested that as soon as practical two important issues be scheduled for discussion at technical meetings. I am pleased to report that a meeting on one of these issues was held during the week of April 5 at Hanford, Washington. The subject was hydrologic testing that should be performed before sinking the exploratory shaft at the Hanford site. The meeting included State and Indian tribe representatives as active participants. The manner in which DOE conducted this meeting, both in its thorough treatment of the technical issues and its achievement of an effective dialogue with interested parties, is an example of the improvement we believe is needed to reach consensus on such difficult technical issues. On the basis of the information presented by DOE and discussed at the meeting, NRC staff accepted DOE's proposed approach as a logical step. NRC management is committed to continue efforts to improve the effectiveness of these technical meetings, including efforts to assure active participation by States and Indian tribes.

The NRC-DOE prelicensing consultation has been generally adequate to permit NRC to perform timely reviews of DOE's programmatic documents. As in any major program involving technical and engineering approaches that go well beyond the normal practice, issues which need to be addressed and resolved are being identified. Therefore, NRC and DOE continue to work toward improving communications on these types of issues to ensure they are being addressed as early as practicable. Moreover, NRC recognizes the need to develop additional regulatory guidance to assist DOE in this aspect of its program development. Currently, both NRC and DOE are working to continue to improve our interactions, as well as to ensure that States and Indian Tribes have opportunities to participate substantively in these interactions.

Concerns of States and Tribes

The potential host states and affected Indian tribes have cited NRC comments on DOE's final EA in support of their views on the individual sites. While the states have focused on many of the same concerns that the NRC staff has raised concerning the final EA's, it is important to provide the particular context in which NRC presented its comments. In our December 22, 1986 letter to DOE we identified the uncertainties I mentioned and we concluded "...recognition of these uncertainties and alternative interpretations is critical to the development of test plans that will lead to adequate characterization of sites and result in the information needed for licensing."

Although NRC concerns have been identified for each site, they are of the sort anticipated at any site when the existing data base is limited. While these concerns should not disqualify the sites from further suitability testing, they could have serious implications for the licensability of each site if they are not satisfactorily addressed by DOE and resolved through the site characterization process.

Staff concerns also indicate that more data needs to be collected during site characterization in order to find out whether the concerns raised can be satisfactorily resolved. Such concerns exist for all nine of the sites that were identified by the DOE in February, 1983 as potentially acceptable sites for a mined geologic repository, and in fact would be expected to exist for any potential site with a limited data base. NRC staff review of the nine draft EA's found no disqualifying factors for any site, but raised concerns similar to those in the NRC staff review of the final EA's. Hence NRC staff concerns about the three sites selected for site characterization were not to suggest that DOE should select other sites, but to develop data to evaluate the validity and significance of such concerns relative to site suitability for licensing.

In conclusion, Mr. Chairman, we believe that there is no technical reason relevant to NRC's responsibilities why site characterization should not continue. The high-level waste repository is a first-of-a-kind facility, involving complex, unique technical issues which can only be resolved through a detailed site characterization program. In its comments on the DOE Draft Mission Plan Amendment, NRC recognized that DOE had made a significant commitment by specifying six activities to increase confidence that the Commission's review of the license application can be completed within the 36 months allotted by the Nuclear Waste Policy Act.

STATEMENT OF GOVERNOR BOOTH GARDNER
STATE OF WASHINGTON

to the

SENATE SUBCOMMITTEE ON NUCLEAR REGULATION

June 2, 1987

STATEMENT OF GOVERNOR BOOTH GARDNER

Thank you Chairman Breaux and members of the subcommittee. I appreciate the opportunity to present this testimony on behalf of the citizens of the state of Washington.

We have reached a critical juncture in the high-level nuclear waste repository program. The site selection process is on the brink of total collapse. USDOE credibility is at an all time low. Unless some bold action is taken soon it is likely that the program will be brought to an abrupt halt by the courts. When that happens, it will result in conditions which will make it very difficult to put the program back together. I believe it would be wise to address the problem now, rather than wait until we are in a crisis situation.

We were disappointed that in the draft amended Mission Plan, USDOE did not face up to the real problems in the site selection process. The draft simply reiterates USDOE's position and rationale on the MRS and on the second round indefinite postponement, and acknowledges what we and most others involved in the process have been saying for two years--that USDOE cannot have the first repository operating by 1998. USDOE decision-makers have lowered their heads and are attempting to charge forward while ignoring the serious problems which have resulted from their past actions.

It is important that you understand some of the reasons why we in the state of Washington are so adamant in our position that the site selection process must be brought to a halt, the May 28th decisions must be retracted, and the process must be restructured before this program goes forward. Our concerns cannot be brushed aside by simply attributing them to the NIMBY syndrome. Our concerns are real and they are substantial.

We, along with almost everyone involved in this program, were shocked when on May 28th of last year, USDOE unilaterally and arbitrarily announced that the second round site selection process had been "indefinitely postponed". This action is clearly in direct violation of the Nuclear Waste Policy Act. Our position on this issue is supported by USDOE's own legal counsel. In documents which USDOE reluctantly released to Congressman Markey's House Subcommittee, there is a memorandum prepared for the USDOE decision-makers in which the staff advised that a decision to indefinitely postpone the second round would be seen as "an obvious political ploy". This advice was right on target. Unfortunately, USDOE decision-makers chose to ignore the advice. USDOE is not above the law and we believe the courts will make that point very clear.

In selecting Hanford as one of the three sites to be characterized, USDOE has ignored the results of the ranking methodology which was reviewed and approved by the National Academy of Sciences. The Academy did not review, nor approve, the process by which USDOE utilized the results of the ranking methodology to select the three sites for characterization. The results of the ranking methodology indicate that the Hanford site is the most costly and the least safe site of the five sites under consideration. Hanford ranks dead last in both the pre-closure and the post-closure comparisons of the sites.

USDOE says Hanford was selected to meet diversity of rock type requirements. However, in a draft of the USDOE ranking methodology report prepared just six weeks prior to the May 28th announcement, it was stated that the Yucca Mountain, Richton Dome, and Deaf Smith sites "offer maximum diversity in geohydrologic settings", and that their selection would "meet the minimum requirement for [rock type] diversity of the Nuclear Regulatory Commission".

In a subsequent USDOE draft, it was stated as follows:

> *"The clear implication from the composite analysis is that Yucca Mountain, Richton Dome, and Deaf Smith are the preferred set of sites for characterization. There are no realistic assumptions about either pre-closure or post-closure expected performance, or about the values used to evaluate performance that can result in Hanford being anything but the last ranked site. And the significance of the performance differences between Hanford and all the other sites is substantial. . . .Thus, it can be definitively stated that the results of the composite analysis strongly suggest characterization of the Yucca Mountain, Richton Dome, and Deaf Smith sites."*

Professor Ralph Keeney was a co-author of the ranking methodology utilized by USDOE. Dr. Keeney was retained by USDOE because of his experience in utilizing the methodology for similar or related problems. Prior to the May 28th decision, Professor Keeney recommended to USDOE that the appropriate means to identify the best suite of three sites was to conduct a professional portfolio analysis. USDOE chose not to follow Professor Keeney's recommendation. Subsequent to the May 28th decision, Professor Keeney prepared and published such a portfolio analysis. This work was not funded by USDOE. Based on his portfolio analysis, Professor Keeney concluded that if three sites are to be characterized they should be Yucca Mountain, Richton Dome, and Deaf Smith.

Professor Detlof von Winterfeldt was retained by the National Academy of Sciences to assist them in their review of the USDOE ranking methodology. Professor von Winterfeldt is nationally known and respected in the field of decision analysis. Subsequent to the May 28th decisions, Professor von Winterfeldt wrote a letter to Mr. Rusche in which he commented, as an individual, on the USDOE ranking methodology report and on the USDOE recommendation report, in which USDOE described the rationale for its selection of the three sites for further study. Professor von Winterfeldt said that, in his opinion, the analysis in the ranking methodology report is sound, thorough, and state-of-the-art. However, as to the recommendation report, he stated the following:

> *"In brief, I believe that the conclusions drawn in the Recommendation Report are based on selective and misleading use of the analysis described in the Methodology Report. It is extremely hard to find in the Methodology Report any support for the selection of the specific set of three sites recommended for characterization. Instead, I find a convincing analysis that clearly rejects the Hanford site and, furthermore, supports the selection of the Richton Dome site over the Deaf Smith site. The way the Methodology Report was interpreted in the Recommendation Report, in my opinion, comes very close to a misuse of an otherwise excellent analysis."*

In his conclusion, Professor von Winterfeldt stated as follows:

> *". . .The most important conclusion that I draw from the Recommendation Report's inclusion of the Hanford and Deaf Smith sites is that DOE is apparently willing to accept more health effects and an additional cost of $3.360 billion in return for several minor advantages of the two sites. As a decision analyst, I find these implications inconsistent with the Methodology Report. As a concerned member of the public and a taxpayer, I find them irresponsible."*

Neither of these distinguished experts in the field of decision analysis has an ax to grind in this process. They both had been involved in the decision-making process in different roles and when USDOE announced its decision on May 28th, they both felt compelled to go on the public record with their own analysis of the decision.

Subsequent to the May 28th decision, the Washington State Nuclear Waste Board retained the services of ECO Northwest, a consulting firm with expertise in decision analysis, to review the ranking methodology report and the recommendation report. Although ECO Northwest had some suggestions for improvement of the ranking methodology report, their general conclusion was that the analysis in USDOE's ranking methodology report was extremely well done. However, as to USDOE's recommendation report, ECO Northwest said the following:

> *"The recommendations report, in contrast, fails to document either its assumptions or its conclusions. It purports to have conducted analyses of all relevant combinations of the possible sets of sites, taken three at a time, but does not inform the reader as to how this was done; furthermore, it makes several assumptions regarding the importance of the various attributes of the analysis that cannot be supported by the data provided in the multiattribute utility study. Whereas, the* [ranking methodology] *report provides a sound basis on which to begin consideration of the Nuclear Waste Policy Act mandate, the recommendations report is a travesty of nearly everything that decision-aiding methods stand for."*

I hope this brief summary concerning USDOE's application of the ranking methodology helps to make clear why the citizens of the state of Washington are extremely upset about the site selection process. How can we possibly be expected to accept USDOE's decision to select the Hanford site when the decision is totally contrary to the results of the ranking methodology, and furthermore the decision is criticized strongly and rejected publically, both by USDOE's own decision analysis consultants who developed the ranking methodology, and by the NAS decision analysis consultants who independently reviewed the methodology for USDOE?

This is by no means a comprehensive discussion of our concerns. We have identified numerous serious technical concerns.

> Groundwater Travel Time: State of Washington and USNRC consultants believe that there is a significant likelihood that groundwater travel time would be less than that required by USNRC regulations.
>
> Exploratory Shaft (ES) Drilling: Drilling exploratory shafts will disturb the groundwater water system, which would lead to the loss of "perishable" hydrology data. ES drilling should not start until the pre-ES hydrology programs have been completed and NRC, states and tribes have an opportunity to consult with USDOE concerning study results.
>
> Geologic Features: Scientists have identified a suspected fault pattern within the controlled area study zone (CASZ). USDOE plans should include provisions for drilling to determine the extent suspected fault pattern.

Presence of Natural Resources: There is strong evidence to suggest the presence of natural resources in the vicinity of the proposed repository. Methane (natural gas), geothermal resources, and groundwater could attract future prospectors to the site.

Retrievability: The Act requires that nuclear waste packages must be retrievable after placement in a repository. Hanford's high rock stresses cause serious retrievability problems and USDOE has attempted to engineer around the problem. At an early stage of the program, the plan was to place multiple canisters in long boreholes. Now USDOE is considering a shallow trench approach. Each succeeding approach has greatly increased cost while not providing confidence that canisters could be retrieved.

Mining Conditions in Deep Basalts: Shaft and tunnel construction will relieve in situ stresses which could lead to spontaneous fractures within the rock and rockbursts from walls of shafts and tunnel. Physical stresses caused by high temperatures and a wet environment will require shorter working hours. A loss of ventilation could allow methane concentrations to reach levels which would allow explosions and/or asphyxiation.

Earthquakes: The many small earthquake "swarms" which occur in the vicinity of the Hanford site indicate the release of rock stresses. The distribution of such swarms gives an indication of where fracturing is occurring in the basalts. The fractures are possible groundwater pathways.

Radionuclide and Chemical Contamination: Previous Hanford activities have resulted in heavy contamination of the CASZ. Independent experts should conduct an evaluation of how defense wastes have reached deep groundwaters on and off the reservation.

Program and Data Management: USDOE's high-level waste management program has been plagued by serious program and data management problems. The overall management approach has been based on competition among several different repository projects. This has led to inconsistent management and data quality at different sites. USDOE is now planning to contract for an overall manager for site characterization programs at the three candidate sites. This is probably an improved approach, but the management contractor will not be in place for at least two years. Clearly, substantial site characterization should not occur until a new management philosophy is operational.

Problems with the quality of data also has been a part of the nuclear waste program. Field work at Hanford associated with the Basalt Waste Isolation Program was stopped because of very serious quality assurance programs.

In a recent election, 83% of the state's voters directed state officials to continue to take all possible steps to halt USDOE's unlawful implementation of the site selection process. The state of Washington has filed five lawsuits in the 9th Circuit Court of Appeals, challenging USDOE's actions. We believe our lawsuits have an excellent chance of succeeding. But it is senseless to wait for the conclusion of what could be a very long process of litigation before taking action to get the site selection process onto the right track. USDOE's May 28th decisions must be retracted and a serious attempt must be made to reach a consensus among the interested parties on improvements to the process. We must develop an approach which provides for a timely solution to the nuclear utilities' short term problem and which establishes a site selection process designed to provide confidence that the search will be for the best site and that selection decisions will be based on credible scientific evidence.

In recent months, several new approaches have been proposed as solutions to the high-level waste disposal problem. The wide variety of seriously suggested approaches is further evidence of the severity of the repository program shortcomings. Some of the proposals are:

1. Retract the May 28th decisions, restructure and expand the site selection process, and restart at the point of writing siting guidelines.

2. Remove USDOE from the process, replace it with a new entity and start the site selection process from the beginning.

3 Halt site characterization in Washington and Texas and characterize the site in Nevada.

4. Provide sufficient financial incentives to encourage a state or Indian tribe to volunteer a suitable site for characterization.

5. Develop regional monitored retrievable storage facilities.

6. Reprocess high-level nuclear waste, extract the usable radionuclides and dispose of the remaining waste in the ocean bottom.

7. Continue on the current path.

All of these suggested approaches, as well as others which have been put forward, have been offered with the sincere belief that they encompass the best solution to the nation's nuclear waste disposal problem. Unfortunately, none of these proposals has gathered a broad enough constituency to begin approaching a consensus. My view of the situation in which we now find ourselves can be summed up as follows:

1. There is unanimous agreement that we must solve the nation's high-level nuclear waste disposal problem;
2. There is widespread agreement that to continue down the current path is an approach which is likely to fail;
3. Although the need for a mid-course correction is recognized by many, there is not agreement on the best answer to the question "*where do we go from here?*";
4. Until the various interested and involved parties can reach a consensus on the best answer to that question, the program will continue to stagger and will eventually collapse.

With these points in mind, in December, I recommended to USDOE that it take the lead in establishing a forum and a process which could be utilized to develop a consensus answer to the question "*where do we go from here?*". It was my opinion that if USDOE were willing to acknowledge the need to consider changes to the site selection process, and were willing to support and participate enthusiastically in consensus-building, its own credibility would be enhanced and there would be a good possibility that positive results could be achieved. USDOE has turned down my recommended course of action. In doing so, USDOE stated that Congress is the appropriate national forum to resolve the controversial issues surrounding the repository site selection process. On this point I am now in agreement with USDOE's position. If USDOE is unwilling or unable to take the lead in attempting to develop an acceptable solution to the serious problems with which we are confronted, then the responsibility must shift back to Congress.

When Congress passed the Nuclear Waste Policy Act, it was generally agreed that it established an effective and workable means to solve the nation's high-level nuclear waste disposal problem. In my opinion, the Act did contain all of the necessary elements to solve the problem if properly implemented. However, the seriously flawed implementation of the Act by USDOE has resulted in an untenable situation which requires that Congress consider a mid-course correction.

We must take the time to reach an agreed, well thought out solution to the complex situation in which we now find ourselves. Before we can go forward in the site selection process with confidence that we will be successful, we must reach agreement on the answers to several major questions which we thought were answered four years ago. We must take advantage of the knowledge and experience gained by the participants in the four years since the Act was passed. The following major issues must be resolved before we proceed:

1. What is the most effective solution to the utilities' short-term spent fuel storage problem?

2. Is there a need for two repositories, and if so, what is the appropriate timing as to the second repository?

3. What are the necessary elements of a repository site selection process that will provide confidence that the search will be for the best site and that selection decisions will be based on credible scientific evidence?

All of these issues are interrelated. Resolution of one is affected by resolution of the others. For example, before a utility could be expected to agree to on site dry-cask storage or a state could be expected to agree to host an MRS facility as the preferred solution to the short-term spent fuel storage problem, the utility or the state must have confidence that the long-term permanent disposal problem will be solved. As another example, if it is decided that there is a need for only one repository, or that a substantial delay in the timing of the search for a second repository is advisable, then the appropriate geographical scope of the site selection process would be impacted.

All of these major issues must be resolved together as part of a package in order to develop a credible overall solution to the nation's high-level nuclear waste disposal problem. There are no "*quick fixes*" which can restore credibility to the current site selection process. In order to assess effectively the existing situation and make an informed decision on the best course of action, I urge this subcommittee and the Congress as a whole to consider the following approach:

1. Bring all site specific activities to an immediate halt;

2. Establish a forum and a deliberative process designed to bring together representatives of all the interests with the common goal of developing a consensus recommendation to Congress in answer to the question "*where do we go from here?*";

3. Implement the recommendations with the appropriate amendments to the NWPA and restart the process.

The goal of the Nuclear Waste Policy Act is to site, construct and operate a repository which will contain high-level nuclear waste from the environment for the next 10,000 years. We are seeking to protect the next 400 generations of humans from the potential dangers of waste produced by three generations. If we can reach consensus on an acceptable and workable solution to the nuclear utilities' short term problem, we should not be overly concerned that we must also restructure and restart the repository site selection process in order to instill confidence in its ultimate success.

Thank you for this opportunity to provide our comments and recommendations on the repository program. I look forward to working together with this subcommittee in developing and implementing a consensus-building process to decide "*where do we go from here?*"

Statement of
William P. Clements, Jr.
Governor of Texas

Before the
United States Senate
Committee on Environment and Public Works
Subcommittee on Nuclear Regulation

June 2, 1987
Washington, D. C.

Regarding the Status of Implementation of
The Nuclear Waste Policy Act of 1982

The State of Texas has been an active participant, since 1977, in the federal government's program that seeks to safely dispose of highly radioactive wastes in a manner that is acceptable to the affected public. The Nuclear Waste Policy Act of 1982 correctly recognizes that the confidence of the public in the waste program is essential to the nation's successful resolution of the waste disposal problem. We in Texas recognize the need to serve the national purpose of disposing of these dangerous wastes in a safe, acceptable and timely manner, but, regrettably, I must report to you that our confidence in that goal being reached through the current implementation of the Nuclear Waste Policy Act is severely stressed.

Today I will speak to some of the matters that have resulted in a continued erosion of confidence in the program. My statement is supported by comments, reviews and evaluations by the Texas Nuclear Waste Programs Office which has coordinated the State's activities on this issue for about five years. We are committed to a technically based program of oversight, and it is our belief that the application of technology in a well planned and executed nuclear waste management and disposal program is required if the public is to gain the needed level of confidence in the short and long-term safety of such a program.

The following discussion contains some examples of our concerns about the implementation of the Nuclear Waste Policy Act since its becoming law in early 1983.

On June 16, 1986, testimony was presented on behalf of the State of Texas before the Energy Research and Development Subcommittee of the Committee on Energy and Natural Resources. In that testimony, concerns were expressed regarding the following topics:

-- The failure to provide a credible technical substantiation for the selection of Texas, Nevada and Washington as candidate repository sites;

-- The failure to consult with Texas, as an affected state, regarding program activities and decisions in a manner intended by Congress and provided for in the Nuclear Waste Policy Act;

-- The failure of the Deaf Smith County Final Site Environmental Assessment to sufficiently evaluate the potential impacts of salt contamination from program activities on prime farmland and groundwater;

-- The failure to adequately consider the potential impacts of the program activities on essential groundwater resources in and around the Deaf Smith County Site;

-- The indefinite deferral of the siting of a second high-level nuclear waste repository, and the potential adverse health and safety consequences of that decision.

There are additional critical technical concerns that lead us to believe that the Deaf Smith County Site, in Texas, is not a suitable candidate repository site, and further to believe that a program that could select such a site for the vast expenditure of funds and time necessary for site characterization must be severely flawed. Of great importance to Texas and the nation is the fact that Deaf Smith County is the top producer of crops and livestock in the State, and ranks second in the nation in cattle and calf sales. Critical to support to this prime agricultural production is the availability of the water resources of the Ogallala and Santa Rosa aquifers which overlie the potential repository host salt strata. A site characterization and repository facility risks the quality of this irreplacable source of water. I would like to emphasize that Deaf Smith County is not unpopulated, undesireable land as one might envision from reading the DOE's impact review in its Environmental Assessment. Instead, the land in the County and at the site is desiganted prime farmland, and the affected public and we insist that it must be protected for its best use, i.e., highly productive farming and cattle raising and feeding operations.

A major concern that we and the NRC staff reviewers share is in regard to the ability to satisfactorily and safely seal the shafts associated with site characterization and repository development under the geologic conditions at the site. The shafts must transect two major underground aquifers, preclude the possibility of groundwater leakage across formations and to the host salt horizon, and ultimately avoid creating or serving as pathways for escape of waste from the repository over a period of thousands of years. A review of available shaft sealing technology raises serious questions concerning whether these requirements for repository protection and waste isolation can be achieved with any level of assurrance. In addition, the ability to seal the shafts adequately directly relates to assuring against catastrophic flooding of the repository or in situ test facility during construction, testing and operations. Mine shaft failures and sudden flooding under geologic conditions very similar to those at the Deaf Smith County Site continue to be reported by the mining industry and progress is slow in development and testing of technology that may reduce the liklihood of such failures. This condition is considered adverse to repository safety and performance in DOE's site recommendation guidelines, yet the Final EA does not acknowledge the condition as being present. In addition, the associated Disqualifying Condition (10 CFR 960.5-2-9(d)), regarding the potential for significant risk to the health and safety of personnel during construction, operation, and closure of the facilities is given essentially no consideration in the Deaf Smith County Site EA.

One of the critical geotechnical issues regarding the potential suitability of the site that raises our concern is whether the host rock characteristics of the Deaf Smith site will permit compliance with the statutory and regulatory licensing requirement that the waste be retrievable for 50 years after initiation of emplacement, as well as whether the repository can be designed, as required, to preserve, for safety purposes, this retrieval option. It is a known fact that salt will creep, i.e., flow under pressure and heat conditions at depth. DOE's own calculations in the Final EA recognize a projected high creep rate for the host salt. These same calculations had earlier been used to project creep rates at the geologically similar DOE Waste Isolation Pilot Project (WIPP) in New Mexico. When compared to data collected from the actual mine openings, the room closure rate was found to be 300 to 400 percent faster than originally predicted. Also, DOE's predicted closure rates for the Deaf Smith salt were derived from analyses on samples that were selected for the highest purity, even though it is known that the impurities in the Deaf Smith host salt will accelerate creep. Core samples from the same boreholes sampled by DOE show multiple interbeds (layers) of mudstone, clay, and anhydrite. This rapid closure rate will preclude maintaining the retrievability option as required by law.

As illustrated in these examples, the DOE has failed to respond to established standards, as well as its pledge to apply technical conservatism in decisions regarding the potential suitability of sites for a repository. The overall level of optimism, associated with a lack of data and the failure to adequately consider available information and interpretations serves only to erode confidence in the technical base of the site selection program of the DOE.

An additional matter related to DOE's activities that is of considerable concern to both the State of Texas and affected local governments in the area of the Deaf Smith County site is the recently announced plans to relocate its Salt Repository Project Office and accompanying contractor offices to the site vicinity. This plan is now being implemented. A DOE and contractor office of nearly 400 workers is planned to be fully staffed in Hereford, Texas by the end of this fiscal year, with a field service contractor office expected to employ and additional about 800 field and office workers to be established in Amarillo, about 40 miles from the site, shortly therafter. The employee influx, over a short period of time will exceed the number of employees described in the Final Environmental Assessment by a factor of about three. The potential socioeconomic impacts, including impacts on local governmental services, of such a large number of workers, plus their accompanying families, on the rural communities in the site vicinity has not been analysed by the DOE. We, in cooperation with local governments, are now initiating a rapid analysis of potential impacts, which surely will take place given the small and currently stable population of some of the affected communities. The DOE, following our lead, has also indicated that it will repeat some of its earlier projections of worker population distribution based upon these vastly larger numbers now planned, but it still plans to carry out its relocation at the same rapid pace. The matter of primary concern is that, in the face of certain impacts, and despite the assurrances from DOE to local officials and citizens that impacts would be avoided, or "taken care of", the DOE announced this month to the Board of Directors of the Vega Independent School District, in which the site is located, and which serves the 900 person City of Vega, the nearest community to the site, that the NWPA does not permit its providing funds for mitigation of site characterization impacts, nor can other area cities, schools, and hospital districts be so assisted. In addition, none of these jurisdictions will be eligible for payment-equiva-lent-to-taxes (PETT) under the Act. The further suggestion from DOE was that a line item appropriation from the Congress may be the only means by which area communities could fund preparation for the anticipated impacts on public services, such as schools, water supply, sewage treatment, etc., or mitigate impacts that occur during DOE's activities at the site. We have written to Ben Rusche, Director of the Office of Civilian Radioactive Waste Management, requesting that the DOE postpone its early plans for relocation of the Salt Repository Project Office until this matter of funding for impact mitigation is resolved. It is my belief that the Congress did not intend, in passage of the Act of 1982, that the taxpayers in affected local communities bear the burden of the site characterization program. It is my hope that the Congress will give this matter serious consideration, and join me in making our concerns known to DOE as well as assist in my request that DOE avoid, as the Act instructs, adverse impacts of site characterization activities.

It is doubtful that a significant investment in additional investigation will satisfactorily reduce the primary technical uncertainties already identified at the Deaf Smith site. In fact, given the state of knowledge of the site, the greater liklihood is that additional major uncertainties will emerge as investigations progress, all of which will result in further questioning of the ability of the site to safely perform in the required manner. To repeat myself, it is most likely that detailed site characterization will raise more questions about the safety and acceptability of the site than it will answer. The Nuclear Waste Policy Act requires the Nuclear Regulatory Commission and the Environmental Protection Agency to establish technical standards for the licensing of a repository and environmental protection standards to be applied in that licensing process. The DOE has been told in numerous communications that the Deaf Smith County Site has a number of characteristics that raise serious doubts about whether it will be suitable for a repository license from the NRC. Despite the severe data limitations, which include the fact that the DOE has collected no primary data from the designated, privately owned nine square-mile selected site, nor has it drilled any boreholes at the site, the preliminary determination that the site is suitable for repository development has been announced. We contend that the Act (Section 114(f)) requires that this determination be made following the completion of detailed site characterization, not at the time a site is selected for characterization, and prior to the collection of any significant site data.

Similar shortcomings have been identified and described regarding the other two candidate sites, in Nevada and Washington, and the pervasive optimism in technical interpretation by the DOE has served to overshadow these as well as those related to the Texas site. It is our conclusion that, there is great benefit and fiscal advantage in the Congress, this year, halting all site-specific activities related to site characterization, its planning, and land acquisition, for a two year period while a Congressionally appointed commission reviews the NWPA program and prepares recommendations on how to sufficiently restore program and technical credibility in order that the nation may then proceed to meet its responsibilities in the safe and acceptable management and disposal of high-level nuclear wastes. With such an effective moratorium and mandated program review, I pledge to you, as I have to all members of Congress from Texas, that we will provide full cooperation in the review and other work of the commission in this necesary effort to seek a sound plan of action for resolution of this critical national problem.

Attachments: A - Dillard Hammett letter (4/16/87) to Ben Rusche

B - J.O. Neff letter (4/28/87) to Steve Frishman

STATE OF TEXAS
OFFICE OF THE GOVERNOR
AUSTIN, TEXAS 78711

LIAM P. CLEMENTS, JR.
GOVERNOR

April 16, 1987

Mr. Ben C. Rusche, Director
Office of Civilian Radioactive Waste Management
United States Department of Energy
1000 Independence Avenue
Washington, D.C. 20585

RE: Funding for Mitigation of Anticipated and Actual Impacts of Site Characterization Activities

Dear Mr. Rusche:

I was disappointed to hear, today, of the presentation made by representatives of your office last evening to the Board of Directors of the Vega Independent School District regarding the inability of the DOE to provide funds from the Nuclear Waste Fund for meeting anticipated impacts on communities as a result of site characterization activities. The elected officials of the City of Vega and the Vega Independent School District first raised the issue of potential impacts to their community in their official presentations for the record of the Public Hearing on the Draft Environmental Assessment for the Deaf Smith County site in January 1985. In May 1985, you visited the community of Vega and assured the same, and additional elected officials and citizens that funds would be made available to offset negative impacts to their communities resulting from the OCRWM program, should the site be selected as a candidate repository site, as it finally was on May 28, 1986. Before and since that date the President of the Vega ISD Board and you have exchanged letters on this matter and the urgency of its resolution.

It was further indicated in the April 14, 1987 meeting with the Vega ISD Board of Directors that there is no availability of funds, according to the Nuclear Waste Policy Act, for the mitigation of adverse impacts of site characterization in any affected community. This determination apparently applies to all forthcoming or anticipated negative impacts in Hereford, where it has been announced that a DOE-SRPO office and contractor office is expected to be acquired and staffed with approximately 400 personnel by September 1987. Your representative also indicated that it had been determined by the OCRWM that the only local governmental jurisdiction eligible for a grant of payments equal to taxes is the County of Deaf Smith.

I have previously written to you regarding our concern over the DOE's plans to move a significant number of workers into Hereford and the site area prior to carrying out any analysis of the potential impacts of the immigration of a large, unanticipated population. The State of Texas is now about to initiate a rapid and necessarily noncomprehensive analysis of potential early impacts of such a population influx. The necessary speed and incompleteness of our initial planned analysis is a result of the fact that the DOE has indicated its relocation schedule is firm over a very near-term and short period of time, and there are certain baseline data sets that we feel must, for technical integrity, be collected prior to any actual population changes resulting from the influx.

It is, therefore, my request, and that of Governor Clements, that you postpone the planned relocation of the SRPO and contractor offices into Hereford, or any other community in Texas, until the matter of how the anticipated and actual impacts of OCRWM site characterization activities will be addressed and financially compensated when necessary. This action is necessary and in accord with traditional governmental practice and fairness, given the conclusion of your office that the Waste Fund cannot serve as the source of funding for mitigation of anticipated or actually occurring negative impacts on community services and governmental budgets, even if the results of our work indicate such a condition will or does exist. Our request in fully consistent with your repeated commitment to Mr. Wayne Richardson, President, Vega ISD, assuring him that you will work to try to avoid adverse impacts before they occur and address any adverse impacts that may occur.

It seems quite clear that the Congress, in enacting the Nuclear Waste Policy Act of 1982, did not intend that the financial costs of the OCRWM program be laid upon local taxpayers in affected communities. If, as your staff personnel have suggested, the only effective resolution to this issue of site characterization impact mitigation may be a congressionally enacted specially designated appropriation, the planned population influx that is under the control of the OCRWM should be postponed until such time as that Congressional action is taken and in effect. If such a special funding approach is needed we would assume that it would have the full and effective support of the DOE.

ATTACHMENT A

Mr. Ben C. Rusche
April 16, 1987
Page 3

I appreciate your concern over the seriousness of the situation that could arise as a result of the DOE's activities in Texas in the near future and I, and Governor Clements await your early response to this request for suspension of personnel relocation into Texas communities pending the effective resolution of this problem.

Sincerely,

Dillard S Hammett
Dillard S. Hammett
Energy Director

DSH/sf:dp

cc: U. S. Senator Lloyd Bentsen
U. S. Representative Beau Boulter
U. S. Representative Larry Combest
Texas Senator Bill Sarpalius

ATTACHMENT B

MAY 1 REC'D

Department of Energy
Chicago Operations Office
Salt Repository Project Office
505 King Avenue
Columbus, Ohio 43201-2693
Commercial (614) 424-5916
F.T.S. 976-5916

April 28, 1987

Mr. Steve Frishman
Nuclear Waste Programs Office
Office of the Governor
General Counsel Division
P.O. Box 12428
Austin, TX 78711

Dear Mr. Frishman:

This letter is to inform you of information presented by DOE to the Vega Independent School District's (VISD) board members on April 14, 1987. The issue of discussion was financial assistance to the VISD for potential impacts to the school system due to possible increased enrollments as a result of DOE site characterization studies.

As you know DOE is responsible to conduct site characterization activities in a manner that minimizes impacts to the local area. We carefully reviewed the issues raised by the VISD board, and the potential for DOE-OCRWM to provide assistance in resolving these issues. Of particular interest to the Board was financial assistance to expand present capability and provide additional teachers in order to be prepared for possible additional students who may enter the system as a result of site characterization personnel moving to their area.

We reviewed provisions of the Nuclear Waste Policy Act for sources of funding that might be provided to the VISD. This included Sections (116)(c)(1) and (3), and (117)(c). We found no authority in the NWPA to provide the requested funds through grants, and explained that the VISD is eneligible for payments-equal-to-taxes because it is not a unit of general local government (general purpose political subdivisions of a state) as required by the NWPA. In summary, we concluded that the requested funds could not be provided under the NWPA.

There are, however, other potential sources of funding which can continue to be explored. These include Federal programs which provide for school construction in areas affected by Federal activities, 20 U.S.C. 631-647, and Congressional action. These were discussed in general with the school board. In addition, we will continue to monitor the settlement patterns of personnel moving into the area, before and after moves occur.

Presently, no DOE staff plan to or have been moved to the Vega area and our projections for contractor staff location do not result in significant negative impacts. We will continue surveying contractor staff plans before moves occur to determine the potential for adverse impacts to develop, and the resultant needs for changes in management policies.

We intend to continue to explore potential sources of funding. Your thoughts on alternative funding sources would be appreciated. I would appreciate any State opinions, of which you are aware, which address the definition of units of general local government and in particular if there are any opinions which have made a broad interpretation of these words. I look forward to continued discussion with you on this and similar issues.

Sincerely,

J.O. Neff
Project Manager
Salt Repository Project Office

SRPO:LKM:mj:0013MJ

cc: S. Kale, RW-20
L. Kent, Vega ISD
W. Richardson, TX
D. Hammett, TX
B. Easterling, RW-42
W. Probst, RW-252
G. Pitchford, OCM
S. Hamm, Vega City Attorney
P. Neidzielski-Eichner/WDIC

#028-870MTX

STATEMENT OF

ROBERT R. LOUX

EXECUTIVE DIRECTOR

AGENCY FOR NUCLEAR PROJECTS

STATE OF NEVADA

BEFORE THE

SUBCOMMITTEE ON NUCLEAR REGULATION

OF THE

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

UNITED STATES SENATE

JUNE 2, 1987

INTRODUCTION

Chairman Breaux, and Members of the Subcommittee, I am Robert R. Loux, Executive Director of the State of Nevada's Agency for Nuclear Projects, which is our State agency with primary responsibility for dealing with the Department of Energy's (DOE's) high-level nuclear waste (HLW) program.

Governor Richard Bryan of Nevada has asked that I convey his appreciation for your invitation to testify today. The Governor cannot appear here personally because our State Legislature is in session, but he has asked that I testify on his behalf. My testimony will reemphasize Nevada's concerns regarding DOE's implementation of the HLW program and will suggest how our concerns might be satisfactorily resolved.

Without question, the time has come for your Committee to address this troubled program's problems. Nevada and the other affected States and Tribes have firmly concluded that the present DOE program is "beyond repair" and that any repository site proposed under this flawed program can never be accepted.

Nevada's concerns over DOE's misguided implementation of the 1982 Nuclear Waste Policy Act (Act) have been extensively documented from the outset of the repository program in Congressional testimony, detailed comments in administrative proceedings and in the extensive and costly litigation that we have been forced to engage in over various improper DOE decisions.

We have objected to many DOE actions, ranging from DOE's denial of our rights for meaningful State consultation, participation and oversight (as illustrated by DOE's continuing efforts to deny or delay Nevada's receipt of adequate program funding for independent studies) to DOE's blatantly political and clearly illegal attempt to cancel the Second-Round siting process by administrative action.

In addition to Nevada's comments and those of other States and Tribes and interested parties, the evidence uncovered by the investigation of the House Interior and Commerce Subcommittees also has shown how DOE has improperly implemented this Act. Your Committee has this comprehensive public record of such concerns available, and we urge your staff to review these materials, copies of which we would be pleased to provide the Committee and discuss in detail with your staff. Although my remarks today will highlight some of these concerns, my comments are intended primarily to distinguish the two very different types of State concerns that exist and, perhaps more importantly, to offer constructive suggestions for dealing with such concerns.

TWO DISTINCT TYPES OF STATE CONCERNS

It is quite important that your Committee recognize and distinguish between the two distinct types of concerns raised by Nevada, Texas and Washington and the affected Tribes regarding DOE's improper implementation of the 1982 Act:

(1) Scientific and Technical Concerns

We have raised numerous legitimate scientific and technical questions regarding the viability and safety of our sites and the questionable methods that DOE has used to collect and analyze data. For example:

- We have objected to many aspects of DOE's defective data collection and evaluation procedures, the lack of adequate quality assurance programs, the fact that DOE has disregarded important data and has given self-serving, overly optimistic and biased interpretations to certain data.

- In addition, with specific regard to the Nevada site, we have demonstrated that the Yucca Mountain site is no panacea, largely free of technical problems, and that there are many serious technical issues that would have to be answered during site characterization with respect to the safety and technical suitability of this site. We have also objected strongly to DOE's failure to perform base-line environmental studies of the Yucca Mountain site, prior to undertaking such extensive site characterization.

- We have shown that, based on DOE's Siting Guidelines, five disqualifying conditions may be present at Yucca Mountain. These conditions relate to postclosure and preclosure tectonics (i.e., faulting), geohydrology, offsite installations and operations and socioeconomic impacts caused by water degradation. We also have noted other areas of major concern, such as volcanic activity, in which available evidence about the site suggests that positive findings cannot be made at the present time (as DOE has improperly done in its Environmental Assessment). In addition, we have pointed out the serious potential conflict between the activities and longer-term needs of the Nevada Test Site and the proposed repository.

- Nevada's primary technical concerns are highlighted in the documents included in Appendices A and B. I must emphasize that we have repeatedly raised such technical concerns with DOE. The fact that DOE has refused to give most of these concerns serious consideration is very alarming. Instead of calming our fears, they have disregarded and therefore increased them. DOE's continuing refusal to provide the State with funding for independent studies to help resolve our technical concerns regarding the suitability of Yucca Mountain also has made us question whether such concerns may be even more serious than we had thought.

(2) DOE's Fatally Flawed Siting Process

Even if our scientific and technical concerns could be eventually resolved, however, it is critical that Congress also understand that neither Nevada, nor the other States with sites nominated for characterization, could accept hosting a repository under the current DOE program because of other different and very serious concerns relating to DOE's unfair and defective siting process. The issue is not, and never has been, merely whether our site would be acceptable by scientific and technical standards.

- From the outset of the repository program, it has been recognized that there are many potentially acceptable sites in many States (including many that have never been seriously studied by DOE).

- No State has wanted to be selected to have a repository, which always has been considered a burden that could only be tolerated if a State is ultimately selected after a fair, unbiased, highly credible and regionally balanced siting process. When it passed the 1982 Act, Congress understood that: (1) many potential sites had to be screened; (2) detailed site characterization activities would be required of the best apparent sites to determine if a site was really safe; and (3) comparing among a group of qualified sites after characterization before selecting a final site was critically important in order to ensure: (a) fairness; (b) the timely opening of a repository; and (c) that the best available site would be chosen. Congress also clearly recognized that only by having such a process, involving active State oversight and participation, could an adequate level of public trust and acceptance be generated.

- Unfortunately, DOE has repeatedly violated the Act's requirements, ignored its basic concepts and sought to follow instead DOE's own predispositions. Not surprisingly, this misguided DOE siting approach has resulted in an unworkable program that is virtually devoid of public trust, credibility and acceptability.

DOE'S CURRENT PROGRAM IS "BEYOND REPAIR"

Many interested parties have sought a "quick fix" to the repository program's problems. Unfortunately, this is not possible. It is essential for Congress to understand that the siting process is "rotten at its core" -- that is, it has been so fundamentally flawed that any subsequent site selection under it would be totally unacceptable. The current siting process has been permanently "tainted" because so many of DOE's fundamental, underlying program implementation decisions -- e.g., the Siting Guidelines, the Environmental Assessments, the site ranking and nomination process and many of the key standards and interpretations involved in these matters -- have been biased, politically driven, unfair and violative of the Act's requirements and principles.

Each State with a site nominated for characterization quite legitimately feels that if the Act had been properly and fairly implemented, it would not have been selected for site characterization, or that even if it had been, the State would be disqualified or not selected for legitimate scientific or comparative reasons.

The fundamental and pervasive defects in the siting process can be illustrated by examining the Siting Guidelines, which serve as the basic foundation and framework for implementing the Act. These Guidelines have undercut the entire program because their flawed provisions are the basis or standard for many subsequent key decisions (e.g., the site nominations), and have ensured a costly and inconclusive program.

What is the primary problem with the Guidelines? In essence, the Guidelines allow DOE to run a mission driven "race" to site a repository according to its predisposition, as though the 1982 Act had not been passed.

DOE's Guidelines lack objective and impartial standards and allow DOE to make highly subjective determinations. They in effect guarantee that DOE can largely disregard the Act's intended siting process and continue with its earlier characterization efforts. DOE has been able to approach the Act as a charade and to keep targeting on the prime sites -- Nevada and Washington -- that it was considering long before the Act's passage. Let me give an example of how the Guidelines have let DOE continue to focus on its preselected targets:

- The Guidelines contain a presumption that a site is qualified until there is data that would clearly disqualify the site. This presumption works in tandem with another Guideline concept, which is that little disqualifying data must be gathered early in the siting process.

- Therefore, DOE has been able to conclude, on the basis of very limited data, that a site is potentially acceptable because it has no disqualifying data, and thus proceed to select the site for characterization.

- Moreover, the Guidelines' failure to require adequate initial screening or to focus more on the collection of potentially disqualifying data early in the siting process also allows inferior sites to be picked for characterization. This makes relatively poor sites appear good by comparison.

- Such a distorted process obviously is unfair and clearly does not ensure that the best or safest available site will be selected on the basis of valid comparisons.

As I will discuss subsequently, the only way to correct the bias and flaws that are inherent in the repository program due to such defects in the Guidelines and later key program decisions is to roll-back subsequent decisions, reissue proper Guidelines, and then reimplement the Act correctly. There simply is no other alternative for regaining public trust and confidence in the repository program.

BASIC CONGRESSIONAL OPTIONS FOR DEALING WITH THE PROBLEMS OF THE DOE HLW PROGRAM

The issue no longer is whether the repository program is off track, but rather, how might Congress best deal with its many serious problems? This is the central question facing this Committee.

As Governor Bryan of Nevada has pointed out, there appear to be only a few basic alternatives and only two such options seem to be viable approaches to addressing the program's problems. The five basic Congressional options concerning DOE's HLW program, outlined in the yellow charts attached to my written statement as Appendix "C," are:

(1) "Doing Nothing" Is Not An Appropriate Option

There now is widespread agreement that DOE's program is totally off track and in serious trouble. Some have suggested that it should be allowed to flounder along until it essentially grinds to a halt. It simply would be irresponsible for Congress to fail to deal with these problems by doing nothing and letting them continue to worsen while hundreds of millions of ratepayers' dollars are wasted.

(2) The Alternative Siting Process Option

An interesting option of leaving the present Act in place, but establishing an alternative siting process, suggested recently by Senator Johnston in S. 839, would essentially provide a significant incentive payment to any State that volunteers to host a repository or an MRS. However, in return for receiving this money, the host State basically would have to forego its rights and protections under the 1982 Act and various other laws, would have to cooperate in expediting the siting effort and would become in essence a co-applicant in the licensing process.

Money Can Not Buy Public Trust

We would be very surprised if any State would show real interest in pursuing this particular alternative concept as now drafted because its economic incentives could never buy the public trust and confidence that are essential for a site to be accepted or tolerated. As local officials from several of the affected States have recently testified concerning such proposed economic incentives, "[s]afety must be a non-negotiable condition to any siting decision," and "[n]o package of incentives can take the place of a scrupulously fair and thorough decision-making and safety evaluation process."

We continue to believe that the most reasonable basis for any State today to accept a site is for it to be shown to be safe and for it to be selected as the best available site after a highly credible site-selection process that fairly compares other potential sites as intended by the 1982 Act. Mere economic incentives can not overcome the need for such a siting process, and such incentives clearly should not be conditioned on a State's giving up many of its key legal rights and protections as would be required by S. 839.

Additional Compensation Is A Valuable Concept

On the other hand, the central concept of S. 839, that any State hosting a repository or an MRS should receive substantial special compensation, is quite correct. Such compensation should be paid regardless of whether the State volunteers to be the host. However, if a State does volunteer to have a site, it would seem appropriate to offer even greater incentives, but such additional benefits should not be available until after sites have been determined to be suitable for the location of the waste facility. I would urge the Committee to include these concepts with the modifications I have suggested in any broader bill containing "fine-tuning" amendments to the present Act.

(3) **Scrapping The 1982 Act Is Not An Appropriate Option For Siting A Repository**

Various observers now are so frustrated with DOE's program that they are suggesting dropping the Act. One such approach being advocated by some Members in effect would scrap the Act by ratifying many of DOE's errors and violations of the Act through the adoption of DOE's proposed Mission Plan Amendments. This approach would be grossly unfair and totally unacceptable.

Another even more unacceptable alternative for scrapping the 1982 Act that some suggested earlier was simply to change the rules and have Nevada take the repository! This approach appears to have been a "trial balloon" that now has been deflated. However, we were amazed that some parties apparently tried to create the misimpression that Nevada was really willing to take the site and that we were merely "holding out for the right price." This allegation was absurd! Approximately 80% of Nevadans oppose the repository, and given the flaws, political manipulation and other biases in DOE's site-selection process, there is no way that it can be said that Nevada has necessarily either the best available site, or even a viable site.

(4) **Retaining The 1982 Act, But Making "Mid-Course Corrections" Is An Acceptable Option**

The only apparently viable and fair option for developing a permanent disposal solution in the near term is to retain the 1982 Act with the addition of certain "fine-tuning" amendments to insure that DOE implements the program as Congress originally intended.

Although we consider the present DOE implementation program "beyond repair," we also are convinced that the Act itself is not. Its concepts generally are fair and sound. Clarifying and technical amendments are needed, however, to insure that the siting process can not be again subverted by agency actions and that it will lead to an operational repository relatively quickly.

Repository Investigation Commission

Under this option there appear to be two basic approaches, both of which should include imposing an immediate moratorium on site specific work and a roll-back of DOE's many totally unacceptable First-Round decisions. Under the first approach, an independent, impartial Repository Investigation Commission, like the recent Rogers and Tower Commissions, would be created. This Commission could promptly study what has gone wrong with DOE's program and make appropriate recommendations to Congress. Such a Commission would expedite the process, and perhaps most importantly, de-politicize it, thereby helping to reestablish the program's credibility and acceptability. Such a Commission also could help answer many of the cost questions that now are being raised concerning the repository program.

Immediate Amendment Approach

While we strongly favor a moratorium and an independent, unbiased commission-type review of DOE's program, if Congress concludes that further study is unnecessary, accepts the validity of our concerns and halts all site-specific work, we are prepared to work with you and other parties in drafting "fine-tuning" amendments to ensure a siting process that fairly follows the 1982 Act. It will be necessary in a number of instances to spell out the amendments' intent in considerable detail through the statutory language. This approach will help prevent subsequent misinterpretation.

Amendments should include provisions such as, for example:

- dropping the recommendations of Nevada, Texas and Washington for site characterization because such recommendations were based on DOE's biased and flawed program;

- adopting realistic time lines so that key program decisions are not driven and biased by artificial and unreasonable deadlines;

- withdrawing the Guidelines, the Multiattribute Utility Analysis (MUA), and the Environmental Assessments (EA's);

- issuing new, revised, unbiased Guidelines, MUA, and EA's that are objective, scientifically grounded, not subject to undue agency manipulation or to allowing an agency to follow its predispositions irrespective of the Act;

- screening for additional potentially acceptable sites in conformance with the revised Siting Guidelines;

- requiring a more phased screening approach to site characterization whereby further information concerning whether a site is likely to be disqualified is obtained earlier in the siting process, thereby ensuring better potential sites will be characterized;

- ensuring greater and earlier involvement and concurrence by NRC and EPA in the siting program;

- guaranteeing greater State and Tribal rights of active participation, consultation and oversight in the process and providing the funding necessary for such involvement, to be administered by a neutral party so that the States will not have to go to court to obtain such funding;

- creating an independent and ongoing oversight and dispute resolution board to monitor, and where necessary, to redirect DOE's implementation of the program;

- providing greater economic incentives to the host States; and

- requiring new procedures to limit conflicts of interest that may arise because DOE contractors involved in site evaluation and nomination may also benefit greatly if the site they are evaluating is characterized.

The DOE HLW program office also would have to be reorganized and new personnel assigned to key policy positions. Many of the present personnel are considered so biased that credibility and trust could never be restored to the program if they remain as the decision-makers on these issues. Congress also might consider shifting the entire program or major portions thereof to another federal agency.

(5) Scrapping the Current Repository Program And Shifting to A Longer-Term Storage Approach Could Be Another Viable Option

Although we support pursuing the fourth option of making "mid-course corrections" to the Act if Congress determines that the repository program should be retained, we also would support scrapping the current repository concept and shifting to a longer-term storage approach, provided the siting of such facilities is conducted pursuant to a fair and workable siting process. Cost factors or other considerations may make such a longer-term storage concept the most appealing and workable approach.

Many parties who have witnessed the continuing problems of the past and current efforts to site a geologic repository now are suggesting that the siting process is so tainted and there are so many difficulties associated with the concept of deep geologic disposal that it simply should be dropped or deferred for an extended period. The high cost of the repository program also is causing some parties to reconsider this approach. In addition, they are pointing out that there are legitimate technical and policy reasons for allowing the waste to "cool" in storage for a much longer period of time instead of being placed in a repository promptly as envisioned by the Act. Senator Evans' new bill, S. 1266, and Senator Hecht's new proposal, S. 1141, embody such concepts.

This approach would in effect terminate or delay for many years DOE's repository siting efforts and rely on one or more MRS-type facilities and other storage technologies (such as the new dry cask storage methods some utilities now are using) for a number of years until a permanent disposal solution could be found.

It has been suggested that regional MRS facilities would be relatively easy and quick to construct and that such facilities would be safe and ensure a fair distribution of the waste burden. Reprocessing and subsea bed disposal and other new waste handling and disposal approaches could be considered carefully during the next few decades while the waste was being safely stored.

We certainly think that this storage option has merit, especially in view of the tremendous cost of the current repository program, and it should be given careful consideration. However, as I noted earlier, any siting process for storage facilities should be both technically sound and conducted in a fair and credible manner because the same type of State concerns relating to safety and fairness that have arisen over the repository program necessarily also exist regarding storage facilities.

CONCLUSION

Chairman Breaux and Members of the Subcommittee, I hope that my testimony has helped clarify why we have concluded that no State can ever accept a site under DOE's current repository program. The program's defects are so fundamental that they cannot be corrected without rolling back many of DOE's actions and reimplementing the program. I also hope that the options and possible amendments that we have suggested are useful.

To participate effectively in the development of options and in the review of possible amendments that may be necessary, a moratorium on any further site-specific work, including land acquisition, at the First-Round sites is essential. During the past year, Mr. Chairman, DOE has given new meaning to the term "double speak." The approach DOE has taken with the draft Mission Plan Amendment, the ambiguous, distorted -- perhaps even dishonest, budget proposals that they have made and their announcement regarding the establishment of a major integrator contractor (which will take over two years to put in place) to manage the technical aspects of site characterization, make it abundantly clear that the Department itself is not ready to proceed.

A moratorium will give Congress and the affected parties the necessary time to step in and deal with this critical program's pressing problems. Nevada is ready to work with Congress, the utilities, the Second-Round States and other interested parties in a cooperative and good-faith manner to address these concerns before additional hundreds of millions of ratepayers' dollars are wasted.

I now would be pleased to answer any questions that Members may have.

BASIC LEGISLATIVE OPTIONS CONCERNING DOE'S HLW PROGRAM

- **Option # 1**

- DO NOTHING

- Disregard Objections of Environmental Groups, States And Tribes, And Other Critics
- Disregard DOE's Proposal In Effect To Cancel Second-Round Siting Process
- Avoid Or Delay Dealing With The Program's Problems
- Leave Issues To Be Resolved By Litigation (40-Odd Suits Already Pending) Or By Subsequent Congressional Action After Program Crashes Further

- **Option # 2**

- ESTABLISH ALTERNATIVE SITING PROCESS

- Leave Act In Place With DOE's Defective Implementation
- Create Parallel Alternative Approach Based On Enticing A State To Take Repository Or MRS For A Significant Sum Of Money ["Let's Make A Deal" or "Name Your Price" Concept]
- Limit Delays And Litigation By Requiring State To Give Up Act's Procedural And Other Protections, To Assist In Licensing Effort, To Forego Various Environmental Safeguards, Etc.
- Assume States' Objections Have Largely Been Political And That Some State Would Accept Such A Deal If The Price Is Right

- **OPTION # 3**

- SCRAP THE 1982 ACT AND REPLACE WITH DIFFERENT APPROACH

- Alternative # 1
  - **Revise Siting Requirements To Try To Simply Politically Force A State To Take Site**
  - **Drop The Act's Concepts Of Fairness, Credibility, Selection Of Best/Safest Site Available, State Consultation and Oversight, Etc.**
  - **State That Process Is Too Costly, Too Much Delay**
  - **Disregard Past Objections Of States**
  - **Try To Isolate A Single State Politically By Telling Other States They Are Not Being Considered**
  - **Claim Any State Objections Are Political, That Repository Will Be Safe (And Hope It Will Be)**
- Alternative # 2
  - **Accept Or Ratify DOE's Actions, Especially Its Second-Round Decision**
  - **Drop The Act's Concepts Of Fairness, Credibility, Selection Of Best/Safest Site Available, State Consultation and Oversight, Etc.**
  - **Disregard Merits Of States' Objections**
  - **Seek Political Support By Nurturing Second-Round States' "Nimbyism"**
  - **Essentially Enact DOE's Mission Plan Amendments And Hope Program Will Not Crash Through DOE's Incompetence, Litigation Or Sites Being Disqualified**

- **OPTION #4**

- KEEP 1982 ACT BUT MAKE "MID-COURSE CORRECTIONS"

[I.e., Fine-Tuning Amendments Such As Congress Enacted In Low-Level Act in 1985]

- Alternative # 1
  - Establish Independent, Non-Partisan Repository Investigation Commission [like Rogers or Tower Commissions], And
  - Impose A Moratorium On Site-Specific Work, With A Roll-Back Of Many DOE First-Round Decisions
    - Better To Resolve Problems Now And Get Back On Track—This Will Be Faster And Cheaper In Long Run
    - Promptly Study The Program's Problems By Utilizing A Highly Credible, Non-Political Commission
    - Obtain Sound Factual Basis And Unbiased Recommendations For Corrective Amendments
    - Commission's Work Can Be Done Quickly, Thus Causing Only Minimal Delay In Siting Work
    - Commission Approach More Suited To Task Than Normal Congressional Committee Process Alone And Its Recommendations Much Less Subject To Challenge As Being Politically Motivated
    - Moratorium Avoids Wasting Additional Ratepayers' Money
    - Roll-Back Of Various Unacceptable Program Decisions Defuses States' Hostilities And Is Needed Because States Would Never Accept Those DOE Actions Due To DOE's Past Bias, Etc.
    - Generic Repository Work Could Continue, Thereby Avoiding Additional Delays

- Alternative # 2
  - Proceed With Amendments Without Utilizing Independent Commission For Factual Investigation

- Concept Would Be To Return To Track Intended By 1982 Act [safe site, fairness, credibility, active state oversight, etc. leading to acceptability]

- Committee Would In Essence Conclude It's Clear That DOE Has Gotten Off Track And That Reimplementation Of Key Actions With Additional Safeguards And Oversight Will Be Required To Meet The Act's Goals

- Necessary Amendments And Related Actions Might Include, For Example:

    - Dropping recommendation of Nevada, Texas and Washington and earlier site nominations due to bias and flaws of DOE's earlier program;

    - Adopting realistic time lines so that key program decisions are not driven and biased by artificial and unreasonable deadlines;

    - Withdrawing the Guidelines, the Environmental Assessments (EA's), and the Multiattribute Utility Analysis (MUA);

    - Issuing new, revised, unbiased Guidelines, MUA, and EA's that are objective, scientifically grounded, not subject to undue agency manipulation or to allowing an agency to follow its predispositions irrespective of the Act, etc.;

    - Screening for additional potentially acceptable sites in conformance with the revised Siting Guidelines;

    - Requiring a more phased screening approach to site characterization whereby more information concerning whether a site is likely to be disqualified is obtained earlier in the siting process, thereby ensuring better potential sites will be characterized;

    - Ensuring greater and earlier involvement and concurrence by NRC and EPA in the siting program;

    - Guaranteeing greater State and Tribal rights of active participation, consultation and oversight in the process and providing the funding necessary for such involvement;

    - Creation of an independent and ongoing oversight and dispute resolution board to monitor, and where necessary redirect, DOE's implementation of the program;

- Greater economic incentives to the host states;
- New procedures to limit conflicts of interest that may arise because DOE contractors involved in site evaluation and recommendation may also benefit greatly if the site they are evaluating is characterized;
- Reorganization of the DOE Program Office and appointment of new personnel to key policy positions (and possibly shifting the program to another agency).

● OPTION #5

- SCRAP THE REPOSITORY CONCEPT AND SHIFT TO INTERIM STORAGE APPOACH

- Adopt Interim Storage While Considering Or Awaiting Alternative Technologies
- Conclude DOE's Implementation Has So Tainted Geologic Repository Concept That It Is Not Viable Approach At This Time
- Note That Storage Generally Can Be Done Safely For Extended Period Of Time While Permanent Solution Is Developed (Approach Essentially Adopted by Some European Countries)
- Possibly Employ Various Storage Concepts:
    - On-Site, Dry Cask Storage (Now A Proven And Presently Utilized Technology)
    - MRS Or Regional MRS's (To Limit Transportation Risks & Give Regional Equity)
    - Federal Storage For DOD Wastes And For Utilities That Lack On-Site Storage Capacity
- Special Provisions To Compensate Utilities For Handling Waste, Etc.
- Greatly Increase Investigation Of Alternative Technologies
    - Subsea Bed Disposal
    - Reprocessing
    - Etc.

UNITED STATES SENATE
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
SUBCOMMITTEE ON NUCLEAR REGULATION

TESTIMONY BY

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ON THE

CIVILIAN RADIOACTIVE WASTE MANAGEMENT PROGRAM

JUNE 2, 1987

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Chairperson Breaux and Members of the Subcommittee:

My name is Edwyna G. Anderson, Commissioner of the Michigan Public Service Commission. I am a member of the Executive Committee of the National Association of Regulatory Utility Commissioners (NARUC) and chair of its Committee on Electricity and of the Subcommittee on Nuclear Waste Disposal. I am here today representing the NARUC with the Subcommittee's Staff Coordinator, Ron Callen, and NARUC's Director of Congressional Relations, John Flumerfelt.

The NARUC is a quasi-governmental, nonprofit organization founded in 1889. Within our membership are the governmental agencies of the fifty states and the District of Columbia, Puerto Rico and the Virgin Islands, engaged in the regulation of utilities and motor carriers. Among other duties, the NARUC is the national representative of state commissions responsible for the economic regulation of utilities now operating nuclear-powered electric generating stations. These commissions have been charged with, among other things, the task of ensuring that the power provided by such generating stations is reliable and reasonably priced -- in short, that the public interest is protected.

The NARUC established, by unanimous resolution in 1984, its intention to review and monitor on an ongoing basis the national nuclear waste disposal program. To implement the resolution, a standing Subcommittee on Nuclear Waste Disposal was established. This Subcommittee of the Committee on Electricity represents the views and position of the NARUC as contained in this statement. We seek to provide critical information to commissioners in all states and to impart to the Congress, the U.S. Nuclear Regulatory Commission (NRC) and the U.S. Department of Energy (DOE) the NARUC's unique and extensive nationwide expertise in all aspects of utility regulation. Our goal is to enhance the federal program and assure that ratepayer funds are utilized most effectively -- a reminder to you that it is ratepayers, not electric utilities, who are paying the bill.

The NARUC deeply appreciates this latest in a series of opportunities to make its views known to the United States Congress. The problems currently facing the national nuclear waste program are extensive and formidable. Only the Congress is empowered to implement solutions necessary to restore direction to a program now in significant disarray. We share the concern of the Congress and others for a successful, safe disposal program. The importance to ratepayers of a well run and cost-controlled effort in this, the most expensive public works program in history, cannot be overemphasized.

Since 1984 we have pointed to problems with the nuclear waste program that center on cost control and management oversight. We have proposed that such things as a Congressional mediation process, an independent evaluation of all lifetime program costs, more substantial control over contractors, and current organizational structure versus an independent agency approach be reviewed as potential ways of addressing current problems.

Our review, energetic as it is, is not an effort to supplant the expertise of the DOE. Yet this review, coupled with our own experience in this and related matters, has produced a series of findings and recommendations over time that we believe would have added greatly to program quality and success had they been followed. At the least, they may have reduced the heavy loss in credibility sustained by the program. We take no consolation in the fact that these recommendations continue to remain relevant because they go unheeded.

Today, I want to focus on several specific issues of importance to the furtherance of this program.

The Monitored Retrievable Storage (MRS) Facility

In the face of all the arguments about the siting of an MRS, the Congress must decide whether it has sufficient information on which to determine if such a facility is advisable. The NARUC takes no position on that point.

Initially, the MRS was proposed as a backup, if needed, to the repositories. By 1985, the DOE had developed it into an integral portion of the disposal program. With the recently announced slips in schedule, the MRS now becomes critical to the DOE's efforts to meet its responsibility for 1998 fuel acceptance. The document provided by the DOE to the Congress in support of an MRS thus appears to lack objectivity, as it appears only to serve the DOE's goal of constructing an MRS. Its conclusions on cost and necessity are at the heart of the controversy over MRS justification. We have emphasized before that cost analyses must range over the entire fuel disposal process, beginning with at-reactor storage of spent fuel. The ratepayer will pick up the bill from initial storage onsite to final disposal.

All this must be weighed in light of a highly debated, incomplete MRS site selection process and the recent discussion by some in the Congress that there should be more than one MRS. In fact, unless this program gets off the ground, there will be 115 defacto monitored retrievable storage facilities, one at the site of each nuclear power plant in the country. Whether the DOE can carry the burden of the development process of an MRS without losing ground on the ultimate goal, the final repository program, or losing the repository all together, becomes the ultimate question.

The Johnston-McClure Bill

S.839 proposes to break down, through cash payments to volunteers, some of the enormous resistance to acceptance of a disposal facility. Social scientists have established that monetary rewards are one of the ways to convince a locale to overcome the "not-in-my-backyard" syndrome. They also assert, however, that affected citizens must find the process and its managers credible, to bolster confidence that the facility can contain its radioactivity over centuries. No amount of money can overcome public fears over a perceived flawed repository resulting from a perceived flawed process. Only a technologically sound, well run program can do that. In short, we believe that the problems of the program may not be overcome merely by implementation of the mechanism embodied in S.839.

Defense Waste Disposal Payments

For many months the NARUC has urged the DOE to formulate appropriate costs to be assessed for defense waste disposal and to actively pursue the initiation of such payments. Fundamental to this issue is the quantity of defense waste to be put in the repository, including the fate of the waste contents of the Hanford, Washington single walled tanks. No agreements over the funding formula or the amount of waste to be disposed have been achieved. No payments have been made. The DOE treats this as an in-house matter between its Office of Civlian Radioactive Waste Management and its Defense Programs Office while electric ratepayers continue to subsidize the national defense program. Billions of dollars are involved. Some in the Congress have stated their reluctance to make payments:

> "Administrators of the waste repository program within the Department of Energy appear to contemplate the payment of a huge up-front payment from the Department of Energy defense program followed by annual fees . . . . . the political hurdles contained in the NWPA may never be crossed. The (Armed Services) Committee is also concerned that, if the fees are to be paid, vital programs will have to be sacrificed for repository use that may never materialize." (National Defense Authorization Act for FY'87, Report of the U.S. House Committee on Armed Services)

Such views neither distinguish nor lend credibility to the waste program or to the Congress. Certainly there is no equity extended to ratepayers. Filing a response to the DOE's Notice of Inquiry does not satisfy the NARUC. Nor does the proposed DOE in-house solution. Defense waste payments ought to run concurrently with ratepayer payments, based on a realistic and equitable assessment of what those payments should be. Congressional action to resolve this problem is a must.

Program Oversight

In the interest of contributing to the best possible disposal program, the NARUC has recommended ongoing assessment of the DOE management and its organizational structure. It is not unreasonable in the face of a $20 to 40 billion project to identify any significant management improvement potential. The NARUC's experience in the utility field would support the fact that expert audits and reviews are readily achievable. We also have recommended attention to the concerns voiced by the U.S. General Accounting Office (GAO) that, in their overall responsibilities and specific to the waste program, the DOE's auditing of contractors needs improvement. The DOE resists such recommendations. The

Congress has the ultimate decision as to what improvements must be made: whether the DOE's delivery is adequate, whether the expenditure of funds is prudent and well controlled and whether the DOE is carrying out Congressional intent in administering this program.

Program Goals

As you are well aware, the direction and goals of the program are under siege. The Mission Plan did not survive its first anniversary. As to the present debate on overall goals, the major questions are disturbingly fundamental, despite their supposed resolution by passage of the Nuclear Waste Policy Act -- how and by whom will the site of the first repository be picked? Are there two repository programs? If so, what is the near-term goal of the second-round program? If there is to be only one repository, which sites are under consideration? Are there one, three, or more sites under study? If only one repository is to be built, what is to be used as an alternative or backup?

Congress and The Program

In addition to the overall goals, the Congress provided through the Act reasonably specific directions to the waste program. It set a schedule and major programmatic milestones. It required studies and, through the fee, the estimate of an overall budget. Nevertheless, substantial numbers of deadlines have not been met. Continual project schedule changes, as experienced in power plant construction, may signify a lack of overall control and lack of confidence in cost estimates.

The 1998 date for repository operation is announced as all but impossible, attributed in part by the DOE to the Congress's refusal last year to release all the requested funds. Those announced budget cuts may well be in order. They should, however, merely precede affirmative Congressional programmatic orders, that is, a revised program with explicit objectives and attainable schedules. Prohibitions on drilling and a warning by the Congress that too many lawsuits are being filed do not constitute resolution of program conflicts and a reorienting of direction. Throughout the development of this program, the Congress must be uniformly specific as to its intent.

The NARUC also is keenly aware of the matter of public acceptance. We have seen an increasing hardening of attitudes on all sides. It is perhaps understatement to note there was no overall improvement in state-federal relations following the DOE's May 28th, 1986 announcement that it was discontinuing a search for a second repository site and later, following an after-the-fact legal review, that it believed it must restore that search. Some time ago we requested Congressional attention to the intergovernmental and public problem. Implementation of the report released by the GAO of its audit of state and federal interaction may help heal the current schism. But we believe more substantial improvements must be made. For it may well be that a federal effort that does not generate considerable credibility and some acceptance, however reluctant or begrudging, will never succeed in establishing a disposal facility. Should these factors result in a complete breakdown in progress, ratepayers could continue to pay dearly for busy work that leads nowhere.

As to costs, it can be estimated that a typical ratepayer might provide much less than $1.00 per month for the high-level waste program. However, that payment represents but a portion of a large and growing cost and the continued increases in rates for nuclear generated electricity. The payments by each utility represent the accumulation of funds supplied by hundreds of thousands of ratepayers in ongoing fashion. Each power plant quarterly payment to DOE equals roughly $1 million. Total payments to date by ratepayers to Washington, including interest, now exceed $3 billion. In return, the entire program has been extended to 2003, five years longer than the 1998 mandate of four years ago. Now, after five and one-half years of cost struggle, some in the Congress are beginning to notice that program costs are setting world records.

Public utility regulators believe that the immense sums generated by the 1 mill per kilowatt-hour fee should be enough to safely and permanently store the radioactive waste now lodged in their respective jurisdictions. We have no assurance that more will not be sought. Yet, there is no guarantee any fuel will move from its present site 11 years from now. Increasingly (and we are committed to carrying this message), local citizens and governments must realize that spent reactor fuel is now stored among us. We face additional costs and problems at home where that spent fuel has been and will continue to be for a long time to come - in those 115 de facto MRS facilities that, by the way, were not designed for storage for anywhere near the period of time they obviously will be utilized. This in-state burden, the program difficulties, the open-ended cost arrangement, the debated final goals and the minimum five-year delay in the program give utility regulators profound pause.

Summary

Few expected implementation of this difficult disposal effort to fall easily into place. The failure of past high-level disposal programs, the challenges to the credibility of the agency in other programs, its record in controlling environmental contamination at its defense facilities and its linkage to promotion of commercial nuclear power add to the problems of credibility facing the DOE.

On the other hand, the waste is here. There is little choice. The NARUC has pledged its best efforts to contribute to a safe solution to the problems that presently plague a project that all citizens inevitably must support. Our national safety depends on it and the costs of it fall to most of us.

In our commitment, we recognize there is a legitimate cost for disposal that ratepayers must bear. However, as we have advised the Congress many times, considering both equity and ability to pay, there is a limit to the financial resources of ratepayers for high-level nuclear waste disposal. Wasted money and resources have no place in the process. That includes legislative debate that focuses on less than overall programmatic problems.

The message to the Congress is both obvious and urgent. As the creators of a delicately balanced piece of legislation designed to effectively handle the long-term disposal of high-level nuclear waste - a piece of legislation now in a significant and substantial state of disarray - only the Congress can step into the breach. Only the Congress can right the course of this program. Only the Congress can determine whether its intent is being followed. Only the Congress can ensure that a safe, cost-effective product results. Years of debate and chaos, of monies thrown into a bottomless pit, serve neither the interests of the program nor the ratepayers (and at some point the taxpayers) who bear the fiscal burden.

We must all share in the responsibility of seeing to timely completion this essential program. The NARUC is committed to assist in finding the proper solutions. It is the Congress who must lead the way.

June 2, 1987

Subcommittee on Nuclear Waste Disposal,
National Association of Regulatory
Commissioners

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Commissioner, Michigan Public Service
Commission

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STATEMENT OF ANNE H. BRINGLOE

VICE PRESIDENT FOR REGIONS

REGARDING THE IMPLEMENTATION OF THE NUCLEAR WASTE POLICY ACT OF 1982

BEFORE THE SENATE SUBCOMMITTEE ON NUCLEAR REGULATION

HONORABLE JOHN B. BREAUX, CHAIRMAN

JUNE 2, 1987

"When we try to pick out anything by itself, we find it hitched to everything else in the universe." *John Muir*
National Headquarters: 730 Polk Street, San Francisco, California 94109 (415) 776-2211

Mr. Chairman, Members of the Committee,

Thank you for the opportunity to present the views of the Sierra Club on the Department of Energy's program for the management and disposal of high-level radioactive waste.

The Sierra Club is a national conservation organization with over 400,000 members dedicated to protecting our natural resources and maintaining a healthy environment. We have members in each of the states under consideration for the developoment of repository and monitored retrievable storage facilities, and also in the states in which commercial and defense wastes are now in temporary storage. We have taken an active interest in the implementation of the Nuclear Waste Policy Act from its inception.

As a matter of national policy, the Sierra Club agrees that the Federal Government should have responsibility for the final disposal of commercial, as well as defense nuclear waste, and that geologic disposal offers the most promising technical option for isolating high-level radioactive waste from the biosphere for the hundreds of thousands of years necessary for it to decay to acceptable levels.

We oppose regional or centralized monitored retrievable storage as an unnecessary and unwise addition to the Federal high-level waste program.

Four years after passage of the Nuclear Waste Policy Act, and one year after the announcement of the candidate sites for characterization, the Federal high-level waste program is itself a candidate for burial.

The effort to select sites for the first repository, already running two years late, has been suspended by Congress. The effort to screen candidate sites for a second repository has been administratively cancelled.

The recently submitted proposal for monitored retrievable storage (MRS) contemplates a facility whose purpose is radically different from that envisioned by the Congress in the Nuclear Waste Policy Act, or by the Department of Energy itself in earlier versions of the waste program. The State of Tennessee, which contains all three sites recommended by DOE for the facility, is concerned not only that it is likely to be the site of a de facto surface repository, but also that its formal opportunity to object to such a site under the NWPA could be lost as a result of statutory misconstruction.

There are now more than 40 separate legal actions pending concerning the implementation of the waste program. DOE is being sued by at least eight states, one Indian tribe, one public utility district, five local and regional public interest organizations, and five national environmental groups. The suits challenge the validity of the siting guidelines, the first round environmental assesments, the first round siting activities, and the siting process for the MRS.

The steady decline and eventual complete loss of credibility of both the high-level waste program and the Department of Energy is perhaps the most disappointing development. The DOE has exhibited little intention to actually obey the spirit or the letter of the Nuclear Waste Policy Act from the very beginning, as was made clear by their early plans to begin drilling at Hanford immediately after passage of the Act regardless of the fact that no site selection guidelines existed and no environmental assessment had been prepared.

The same institutional behavior continued with the manipulation of site ranking data to make DOE's favorite sites appear to have been chosen by a scientific ranking process, followed by the decision to suspend second round selection activities.

This continual movement away from the original intent of the Act to create a rigorous technical process and instead towards satisfying the industry as a first priority has produced S.839, a bill which strips away the last veil of technical or scientific repository site selection. At the same time, the evident disintegration of the repository siting process as managed by DOE has encouraged a new interest in alternatives to geologic disposal, as evidenced by Senator Evans' bill, an attempt to solve the problem by providing regional MRS facilities in lieu of a repository.

The Sierra Club believes that this nation need not accept this defective waste management program, nor amendments to the Nuclear Waste Policy Act which would compromise the intent of the legislation. We can move forward towards a technically conservative, environmentally sound solution to the high-level nuclear waste problem by first examining the defects with the present program. The program must then be restructured on a technically rigorous basis and pursued in a manner that establishes credibility with affected states and tribes, and on a realistic schedule which will accommodate the need to resolve difficult technical problems at each stage of the process.

Industry and DOE spokesmen like to leave the impression that the disintegration of DOE's siting effort is due entirely to the cynical political resistance of the states, fueled by the ignorant anxieties of the great unwashed masses about a technology with which they are unfamiliar. Viewed in this light, the political opposition to site selection can be resolved through the use of appropriate political and financial incentives -- in other words, bribes.

In fact, the public is not as stupid as DOE thinks. Our worries flow directly from the well-known technical flaws and bureaucratic stumblings of the DOE program. Despite DOE's attempts to patronize us, we have grown more skeptical the more we have learned about the inner workings of the DOE program:

The criteria that governed the original selection of sites are inadequate. The guidelines require isolation of high-level waste for 10,000 years within ten kilometers of a site, but wastes will be lethal for much longer; potentially hundreds of thousands of years. These guidelines provide faint assurance that wastes will remain isolated and contained during the time required for the radioactivity to drop to acceptable levels.

The guidelines were written specifically to be able to "grandfather" in all the sites from DOE's old administrative program. The DOE did not follow an objective, scientific process to determine what criteria would produce a technically adequate site; rather, it looked at the sites it had already identified, two of which were on federally owned land, and made sure the guidelines were broad and vague enough to allow their inclusion.

The geohydrology guidelines are too vague to assure waste isolation and containment. The inclusion of the Hanford site with all of its groundwater problems is clear evidence that the guidelines have failed. In addition, the DOE issued these guidelines before the Environmental Protection Agency issued the standards that must be attained.

The DOE has, from the beginning, allowed the program to be politicized, thus seriously compromising the entire process. An early indication of this was the agreement with the state of Louisiana assuring that it would not be considered for a repository.

In May of 1986, the DOE decided to drop (an illegal move according to the NWPA) the second round of sites from consideration as repositories. This second round of sites was mandated by the NWPA to provide geologic and geographic diversity to the program, thus providing a better chance of identifying technically workable sites.

DOE has made independent review of the geologic and hydrologic data by the affected states very difficult; in many instances making state and tribe participation in the process frustrating and meaningless. Documents are sometimes discovered only after extreme pressure is applied to DOE. An example of this is the decision memorandum prepared by DOE on the costs and benefits of dropping the second round from consideration. This memorandum, which was discovered by investigators from House Committees, actually cited "immediate political relief" as a major reason for halting the second round. It is no wonder that it took a special investigation to find such a telling document. The States, tribes and citizen groups can't help but wonder what other information has been kept from the public.

The method used by the DOE to narrow the list of candidate sites to the list of sites to characterize, the multiattribute utility analysis (MUA), was missapplied to reflect DOE's pre-determined choices for characterization. Professor Detloff von Winterfelt, an expert on MUA and a consultant to the National Academy of Science's Board of Radioactive Waste Management, stated that the conclusions drawn in the recommendations report from DOE were based on selective and misleading use of the analysis described in the methodology report. In simpler terms, the DOE "fudged" the data.

Each of the final three sites to be characterized has known flaws which could lead to the elimination of the site on technical grounds. The guidelines failed to eliminate even Hanford, the most obvious dud in the group. The existence of these problems in the candidate sites greatly increases chances that a fully characterized site could prove to be unusable. One could imagine the spectacle at the Kentucky Derby if all the horses at the starting gate were twenty years old and lame. With such high costs at stake, the DOE should have, at the very least, started their repository race with "sound horses".

The Hanford, Washington site, only five miles from the Columbia River which is itself vital to the economic well-being of much of the Northwest, is located in fractured, faulted basalt, a waste storage medium not being considered anywhere else in the world. Complex groundwater systems flow through the basalt, it is seismically active, and there may be oil and gas deposits under the area.

Yucca Mountain, Nevada, is the location of the tuff site. It is subject to tremors produced by the Nevada Test Site activities, it may again be an active volcanic site at some time in the future and it has natural earthquakes.

Deaf Smith County, Texas, a bedded salt site, is located in one of the prime agricultural production areas in the country. The repository would be located beneath the Ogalala and Santa Rosa aquifers, two major sources of irrigation and drinking water for eight Southern Plains states. The characterization activities themselves would pose a serious threat to the aquifers and to the farmlands surrounding the site. A common misconception about the Texas site is that it is a dry desert-like area with cactus, rocks and a few cattle. The truth is that it bears more resemblance to a New Jersey truck farm with carefully tilled, rich, dark soil.

The current level of confidence in the DOE and its program is sometimes blamed on the inaccurate perceptions of the general public. Actually, the public is now, for the first time, relatively well informed about the history of the AEC and the DOE and the status of the nuclear waste programs. The tangled web which slows the progress of the waste program has been woven by the Department of Energy itself, not by public interest groups, Congress or the states.

Senate Bill 839, the Johnston-McClure Bill, seeks to rescue the DOE's radioactive waste program by giving "incentive payments" to states willing to take a repository site in exchange for essentially giving over any and all rights a state has under the terms of the NWPA. The basic assumptions behind S.839 are that it is politics which are holding up the program, not lack of technical expertise or the presence of disqualifying characteristics of any specific site.

This assumption is inaccurate. S.839 cannot right the DOE's sinking boat because it does not address the real problems which have doomed the current program. It does nothing to encourage the scientific and technical efforts which would assure a safe repository and it does not remedy the institutional defects which have plagued the program. Any state Governor would be a fool to enter into this Faustian bargain.

The time to correct the inadequacies of the site selection process is now, before the huge expenditure of site characterization money, not afterwards. Once enormous institutional and fiscal resources have been spent on a proposed site, it would be difficult to re-direct program efforts, even if the site in question contains lethal defects. Calling a halt now and taking time to evaluate the high-level waste disposal effort as a whole may prevent costly mistakes and years of wasted effort.

Congress should establish a mechanism through which a review of the technical and institutional management of the present waste program can be conducted. Recommendations have been made by Governor Clements of Texas and Governor Gardner of Washington State that a special Commission be formed to carry out this investigation and recommendation process. The Sierra Club views this idea as a responsible path to reformation and restart of a high-level waste program which can be technically competent and politically possible.

To those who object that there must be no delay in DOE's repository siting schedule, one might reply that it is better to get there late than never at all. The NWPA's 1998 goal for repository operation never had much to do with any realistic assessment of the time necessary to develop the nation's first operating geologic HLW repository, as the Department's revised Mission Plan makes clear.

Since the passage of the NWPA, the development and licensing of modular dry cask spent fuel storage has largely mooted the spent fuel storage "crisis" predicted by the utilities during debates over the Act. Dry casks are already in use at some utilities, including VEPCO and TVA, and there seems to be little restriction to their wide availability in the near future as a low-cost method of incrementally increasing at-reactor storage capacity. Legislation has already been introduced which would allow utilities to take credit against their obligations to the Nuclear Waste Fund for any expenditures necessary to expand their on-site storage capability after 1998, if further time is necessary for the development of a final repository.

Further time, and a restructuring of the Federal HLW disposal effort on a more rigorous technical footing and a more adequate institutional basis, will be necessary. Without such a restructuring, this program will likely end with the same dismal record of failure that past DOE and AEC waste disposal efforts have accumulated over the years.

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UNITED STATES OF AMERICA

Senate Committee on Environment And Public Works
Subcommittee on Nuclear Regulation

Testimony of

Michael Philips
Legislative Counsel
Union of Concerned Scientists

June 2, 1987

Thank you for the opportunity to appear before you today. I am Legislative Counsel for the Union of Concerned Scientists, a non-profit public interest organization concerned primarily with issues of energy policy, nuclear safety, and arms control. UCS's work is funded by the contributions of some 100,000 sponsors around the country.

One of the key questions in the nuclear waste debate is: Has DOE applied sound analytic and scientific methods? I'd like to explain why the answer to that question is no. I'd like to focus on the first round site selection process. While there are also questions with regard to DOE's selections for the second round, it is in the first round where there seems to be the greatest misperception that DOE has performed satisfactorily.

The problem with the first round site selection process was that there was no ascertainable methodology applied to the selection process. There was a decision-aiding methodology document, which purported to contain an objective, scientific comparison of the five sites under consideration. But there was no overall methodology explaining exactly how this information would be incorporated into the decision on which of the five sites would make the cut to the three selected for site characterization. The purpose of a methodology is to spell out in advance the approach you are going to use to analyzing a problem. That way, reviewers of your analysis can be sure that you haven't forced a certain set of results by changing your approach along the way. DOE did change its approach along the way.

For example, one of the criteria used to compare candidate sites was cost -- the hypothetical costs of building a repository and transporting the high-level waste and spent fuel to it. Most everyone would agree that such costs are certainly factors worth considering. They may not be the most important factors, but they should certainly be considered, and in fact Section 112(a) of the Nuclear Waste Policy Act explicitly requires DOE to consider transportation costs. DOE did consider them too, at least initially in their methodology, known as the Multiattribute Utility Analysis. When these costs were plugged into the methodology, they dominated all other criteria, so that the most expensive sites also showed up as the worst sites for the repository. At this point, DOE decided to eliminate costs from the analysis, arguing that costs should not dominate. Apart from the question of whether costs should in fact dominate the analysis is the question of whether you should spell that out in advance. Proper scientific method requires that you do. Professor Ross Heath, one of members of the National Academy of Sciences Board on Radioactive Waste Management which reviewed DOE's methodology commented on DOE's exclusion of costs in the following way

> Implicit in the MAUA [Multiattribute Utility Analysis] is the trading off of all preclosure factors. Thus, the derived values already include DOE decision makers' assessment of the importance of cost relative to health, safety, socioeconomics, etc. To then say that cost can be dropped from the utility because NWPA says it is least important constitutes double discounting that, I am sure, would never pass an IRS audit.[1]

One of the consultants to the NAS Board, Professor David Bell, has stated, ". . . the exclusion of these costs doesn't make much sense as far as I can see."[2]

In another case, while considering health and safety criteria, DOE excluded injuries and genetic damages from consideration. DOE does consider fatalities, but not injuries. Presumably, if there are fatalities arising from the construction of a repository, then there will also be injuries. DOE originally did include injuries and genetic damages, but ended up dropping them, arguing that they didn't change the rankings of the five sites within the health and safety category.[3] But by excluding injuries and genetic damages, DOE down-played the health and safety impacts relative to other factors. This became especially significant after costs were excluded. With costs excluded and the health and safety measures down-played, socioeconomic and aesthetic factors clearly dominated the analysis. As was the case with the exclusion of costs, this approach was not spelled out in advance by DOE. According to Professor Detlof von Winterfeldt, a consultant to the NAS Board, "After excluding costs, it was clearly improper not to pay attention to injuries and genetic damages." [4]

A third example involves the rocktype diversity criterion. DOE argued that since all five sites in question were suitable, the final decision on which three to select could be made on the basis of diversity of rocktype. Again, in addition to the question of whether that is appropriate is the question of whether DOE was explicit in advance about how the rocktype diversity criterion would be used -- as a tie-breaker rather than as another factor to be incorporated into the decision-aiding methodology. Rocktype diversity could have been incorporated through a procedure known as portfolio analysis, in which triplets of sites are examined as opposed to individual sites. This was explicitly recommended by Professor Ralph Keeney, who helped develop DOE's site selection methodology, and who has since issued his own report showing how the application of portfolio analysis would not have recommended the suite of three sites recommended by DOE with its crude use of the diversity criterion to overwhelm all other factors.[5]

NAS reviewers and DOE consultants are not the only ones who have expressed concern about DOE's decision-making approach. In an internal DOE memorandum titled "Principal Shortcomings," Tom Isaacs, Deputy Associate Director of DOE's Office of Geologic Repositories and one of the managers of the methodology's development, makes the following comments about one of the near-final drafts of the decision document:

> New write-up blatantly manipulates the methodology and its application to force it to spit out the "proper" sites. It throws out certain factors, arbitrarily reduces or increases the value of others, picks certain tradeoffs as better than others and portrays the methodology as decision-maker.
>
> Serious Shortcomings
>
> - Provides no technical justification for the decision
> - Arbitrarily throws out cost as a consideration in violation of Act and Guidelines
> - Winds up saying socioeconomics is the basis for the decision
> - States that post-closure should not be weighed too heavily in direct violation of Act, Guidelines, NAS recommendation and common sense

- Incorrectly implies little difference in health and safety impacts among sites

- Portrays rock diversity as requiring 3 types[6]

I'd like to point out that these criticisms are not new. They were first made last fall. But there are still a number of people unaware of them who think DOE followed proper scientific and analytic procedures. The conclusion to be reached from these procedural shortcomings is that if you allow DOE to continue on its current course, even with improved scientific review from here on out, you are building on a weak analytic foundation. You don't need to take the program back to square one, but you do need to revisit some problem areas, such as the process for arriving at the site nominations.

DOE argues that you can't create a methodology where you simply feed in the data and it spits out the correct sites, and that human judgment plays an important role as well. That is true, but where human judgment comes into play, so can human bias. In order to minimize bias and even the appearance of bias, it is absolutely essential that there be independent review of the parts of the decision-making process where judgment comes into play. In fact, the NAS Board repeatedly recommended the use of outside experts to provide this function. While the NAS Board officially states that it found no evidence of bias in DOE's implementation of the methodology, the fact is that DOE's methodology report went through substantial revisions by DOE, including "human judgment" revisions, after the final review by the NAS Board. The Board never reviewed the final methodology document or final decision document.

There is a general misperception that the NAS Board has endorsed DOE's implementation of the site selection methodology. This misperception has in some cases been fostered by DOE itself, and individual NAS Board members have expressed concern about that. It should also be understood that the NAS Board's review of the decision-aiding methodology can not be interpreted as an endorsement of DOE's overall site selection process or of the sites chosen. There was no independent review of those.

As a consultant with the House Interior Subcommittee on General Oversight last year, I had the opportunity to discuss these matters with individual NAS Board members and consultants. In verbal and written communications with them, I found a very different picture of how they as individuals view DOE's work than is revealed in either their formal reports or in DOE's claims.

For example, in addition to the Board members and consultants I have already quoted, one of the Board members, Susan Wiltshire, stated, "It's possible to intellectually rationalize their [DOE's] decision . . . but it's all based on a series of human judgments which can be made any number of ways."[7] Another Board member, John Matuszek Jr., commenting on translating physical data into a mathematical format, stated, "It is very open to inclusion of bias."[8] He also stated that he thought "What DOE was looking for was the imprimatur from the Academy."[9] Still another Board member, Frederick Mackenzie, said he was "not satisfied" with how the methodology reviewed by the Board was applied to the decision.[10]

In all fairness, I should state that a number of NAS Board members are supportive of DOE's site selection decisions. But what is not widely known, and what DOE has never acknowledged, is that there is not a consensus among the NAS Board and consultants on the efficacy of how DOE dealt with the diversity issue, or on how DOE considered injuries and genetic damages, or on how DOE considered repository and transportation costs. It is especially significant that the Board decided it needed to hire outside decision analysts to help them assess DOE's methodology -- and these consultants, Detlof von Winterfeldt of the University of Southern California and David Bell of Harvard University, are among DOE's harshest critics.

By focusing on the first round problems in this testimony, I don't mean to suggest that the second round siting decisions or other aspects of DOE's high-level waste disposal program are beyond reproach. There is reason to believe DOE's estimates of future spent fuel production are off. DOE has argued that projected waste volumes have decreased -- this is primarily based on their assumption that fuel will be held in reactors longer ("extended burnup"). But according to a report received by DOE on May 16, 1986 from Batelle Pacific Northwest Laboratory:

> Increased fuel exposure levels will not reduce repository disposal (underground area) requirements. This is because . . . repository capacity in all media is limited by the heat generation rate of the spent fuel or high-level waste. Higher exposure reduces tonnage but total heat is actually somewhat higher, especially in the long term, because of the increasing quantities of long-lived heat generating transuranic nuclides, e.g., americium and curium isotopes, that are produced at higher burnups.[11]

DOE's Nuclear Waste Fund fee adequacy assessments also rely too heavily on questionable assumptions. In the March 1986 study (the most recent one available) the only scenarios which show a positive fund balance rely on the Energy Information Administration's mid-case projection of future nuclear power generation and assume there will be no program delays. In every other case there is at least the possibility of exposure to deficits, depending on guesses as to what interest DOE will earn on invested fee revenues. In other words, only the demonstrably most unrealistic assumptions allow DOE to argue that the fee is adequate.

The EIA mid-case scenario is a dubious scenario on which to base future fee revenues. The 1985 mid-case assumes that there will be no future cancellations of nuclear construction projects. Since then there has already been one cancellation (Seabrook 2) and one unexpected retirement (La Crosse). The case also assumes a moderate rebirth in the nuclear power industry from 1990 to 2020. That can only be based on faith, because there have been no new orders since 1978 and every plant ordered since 1974 has been cancelled. Most analysts expect that about half the score of plants now in construction are cancellation candidates.

The advocacy of a monitored retrievable storage (MRS) presents another potential case of bad science on DOE's part. I realize this subcommittee is planning a separate hearing on that issue, but as long as we are discussing the role of the NAS Board and of independent review, this subcommittee should be aware that NAS Board member William Colglazier of the University of Tennessee, in a 1987 assessment of the need for the MRS, states: "The subjective judgment of the Director of the Office of Civilian Radioactive Waste Management, based in part on political considerations, formed the basis for MRS site selection in Tennessee and specifically Oak Ridge."[12]

If Congress allows DOE to proceed uninterrupted with the high-level nuclear waste disposal program as it is currently structured then you will be allowing the house of cards to be built ever higher. We now see that the cards in this house are all jokers. There is an urgent need for some form of independent review of DOE's performance with an eye toward getting the program's credibility and scientific efficacy back on track. In this regard, the Union of Concerned Scientists supports the efforts in Congress to put a temporary halt on the program while an independent commission reviews the issues and reports back to Congress.

In addition, we believe there is a need for assuring permanent, independent technical review of future policy products, such as Mission Plan amendments, site selections, fee assessments, and the like. It will help the program immeasurably to have someone ready to answer the question that will keep coming up at each step in the process, which is, "Is this DOE decision supported by proper science?" Ultimately, if an agency wants to finagle its way around the intent of a law to do what it wants, it may be impossible to stop it. But independent scientific reviews of key policy decisions will just make it that much more difficult for this particular agency to do that finagling.

Again, thank you for the opportunity to present these views. I'll be happy to answer any questions you may have.

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2. Letter from David Bell, Professor of Business Administration, Harvard University to Representative Jim Weaver, October 28, 1986.

3. A Multiattribute Utility Analysis of Sites Nominated for Characterization For the First Radioactive Waste Repository - A Decision-Aiding Methodology, U.S. Department of Energy, Office of Civilian Radioactive Waste Management, Section 4.6.4, page 4-34, May 1986.

4. Letter from Detlof von Winterfeldt, Associate Professor of Systems Science, Institute of Safety & Systems Management, University of Southern California to Representative Jim Weaver, October 23, 1986.

5. An Analysis of the Portfolio of Sites to Characterize for Selecting a Nuclear Repository, Ralph L. Keeney, Systems Science Department, University of Southern California, November 1986.

6. "Principal Shortcomings", by Tom Isaacs, Internal DOE Memorandum, Mid-April 1986.

7. Telephone conversation between Susan Wiltshire, JK Associates, South Hamilton, MA and Michael Philips, Consultant, House Interior Subcommittee on General Oversight, October 1986.

8. Telephone conversation between John Matuszed, Jr., Wadsworth Center for Laboratories and Research, New York State Dept. of Health, Albany, NY, and Michael Philips, Consultant, House Interior Subcommittee on General Oversight, 9/30/86.

9. IBID.

10. Telephone conversation between Frederick Mackenzie, University of Hawaii, Honolulu, HI and Mike Philips, Consultant, House Interior Subcommittee on General Oversight, 10/10/86.

11. Considerations Bearing on the Timing for a Second Geologic Repository, Battelle Pacific Northwest Laboratories, Richland, WA; Draft study prepared for DOE under Contract DE-AC06-76RLO 1830, p.2; May 16, 1986.

12. Forum for Applied Research & Public Policy, The MRS: An Assessment of Its Needs and Feasibility, E. William Colglazier, Director, Energy, Environment, and Resources Center, University of Tennessee, Knoxville, TN; Spring 1986, p. 26.

TESTIMONY OF DEL T. WHITE
NEZ PERCE TRIBAL EXECUTIVE COMMITTEE
BEFORE
THE UNITED STATES SENATE COMMITTEE
ON
ENVIRONMENT AND PUBLIC WORKS - SUBCOMMITTEE ON NUCLEAR REGULATION
JUNE 2, 1987

Mr. Chairman, members of the Committee, I am Del T. White, a member of the Nez Perce Tribal Executive Committee, NPTEC, and Chairman the Nuclear Waste Subcommittee of NPTEC and I am accompanied by Ronald T. Halfmoon, the Manager of the Tribe's Nuclear Waste Policy Act Program. I wish to thank the Chairman and members of the Subcommittee for the opportunity to appear and testify at this oversight hearing on the Nuclear Waste Policy Act of 1982. As you may be aware the Nez Perce Tribe was certified in 1984 by the Secretary of the Interior as an affected Tribe for purposes of the Nuclear Waste Policy Act of 1982 (NWPA). At that time it was determined that the Nez Perce Tribe could suffer significant and adverse impacts to our off-reservation treaty rights should the Hanford, Washington site be selected as a repository for nuclear wastes. Since that time, of course, Hanford has in fact been selected as one of the three sites for characterization for the first geological nuclear waste repository.

Our experiences with the Department of Energy (DOE) in defining the scope of the role of affected Tribes, and in the process that has led to site characterization selections, demonstrates the need for continual and vigorous oversight over the Department of Energy.

Our reading of the legislative history of the NWPA indicates that Congress, in its multi-year struggle to enact a legislative scheme for nuclear waste, had confidence in the underlying scientific concepts for the project, but did not have confidence in agencies responsible for implementing those concepts. This demonstrated lack of confidence was based on Congressional experience in finding decision-making politicized in the atomic energy field. In order to protect against distorted decision-making and the consequential threat to the public safety, Congress created a legislative framework that requires frequent oversight by the responsible Congressional Committees and assigns Affected States and Tribes with significant oversight responsibility and authority. Responsibility and authority that until very recently DOE challenged and frustrated at every turn. Much has been made of what appears to be the continual conflict of the States and Tribes with the Department of Energy. Hopes and legislative proposals have been expressed that seek to turn this conflicted process into a cooperative process. While the Nez Perce Tribe has consistently endeavored to operate on a amicable basis, we strongly suggest that what has been labeled conflict is nothing more than the States and Tribes meeting their Congressionally mandated role. A role critical to the successful implementation of NWPA.

I.The role of "Affected Tribes" Under the Nuclear Waste Policy Act.

The NWPA provides the means to locate and construct disposal facilities for high-level radioactive waste generated by both civilian and defense activities. NWPA contains an elaborate schedule for the siting, construction and operation of disposal facilities in deep geological repositories. Congress mandated that the process for developing the repositories insure that wastes would not adversely affect either public health, safety, or the environment, now or in the future. To develop public confidence in repositories, as well to guard against politicalization of a scientific process, Congress determined that public participation in the planning and the development of the repositories was essential. The principal means of providing for this public involvement are found in the role Congress assigned to host states and "affected Indian Tribes."

The status of an "affected Indian Tribe" applies to all Tribes hosting a potential repository site. Section 2(2)(a). Congress additionally defined an "affected Indian Tribe" as one "whose federally defined possessory or usage rights to other lands outside of the reservation's boundaries arising out of congressionally ratified treaties may be substantially and adversely affected by the locating of such a facility... ." Section 2(2)(b). The three affected Tribes participating in the first repository program - the Nez Perce Tribe, the Confederated Tribes of the Umatilla Indian Reservation, and the Yakima Indian Nation - all are Section (2)(2)(b) or "non-host" tribes. It was the Senate who led the effort that provide our Tribes with rights under NWPA.

H.R. 3809 did not provide for participation by 'non-host" tribes. Only "host" tribes were eligible for the rights of participation and financial compensation under the House passed bill. When, however, at conference, the House receded to the definition of "affected Indian Tribes" proposed by the Senate, the effect of this decision was to grant "non-host" affected Tribes the same rights of participation and compensation that were available to "host" Tribes under H.R. 3809.

It has become axiomatic among NWPA program participants that the legislative history of the Act is unclear with respect to particular provisions. The conflicting approaches of the House and Senate were resolved in last minute negotiations during the "lame-Duck" session of the 97th Congress. The lack of a final conference report complicates matters.

Nevertheless, a review of the legislative history that does provide indications as to the appropriate role of "non-host" Tribes. NWPA, as passed, is closed patterned on H.R. 3809, however, the actual intent of the Act with regard to "non-host" Tribes may be found only in the reports and debate in the Senate where the definition of "affected Indian Tribe" was created. While the House had strictly limited tribal participation under, for example, Section 118, to those Tribes "on whose reservation" a repository was proposed to be located; the Senate bill was less specific delineating the levels of either State or Tribal participation, but envisioned equal levels of participation between States and Tribes. Moreover, the Senate drew no distinction between "host" affected Tribes and "non-host" affected Tribes.

When the House and Senate bills were reconciled in the closing hours of the 97th Congress, each House made key concessions that affect the issue of participation by "non-host" affected Tribes. The Senate receded to the House on the provisions detailing the rights of participation of States and Indian Tribes. Sections 112-118. The House receded to the Senate on the inclusion of "non-host affected" Indian tribes. The summary of the Conference bill submitted to the Senate listing the major changes to H.R. 3809 agreed to by both Houses stated:

> The following summary sets forth those major changes to the house passed bill... .
>
> * * * * * *
>
> "Rights conferred upon an Indian tribe to participate in the development of a repository, enter into a written agreement, transmit objections to Congress, and receive financial assistance are extended to "affected Indian tribes." The term "affected Indian tribe" includes those tribes, which although the repository is not located on the reservation, would suffer substantial and adverse effects to the possessory or usage rights to lands outside of the reservation. (Statement of Senator McClure, Cong. Rec. S15654, daily ed., December 20, 1982).

Therefore when the Conference Committee accepted the Senate definition of "affected Indian Tribes" the effect was to extend to "non-host" affected tribes the identical rights of participation and compensation as were available to "host" Tribes.

We have taken the time to lay out this complicated history, not to justify our current participation in the legislative process, for it is Congress that has granted and recognized our rights, but because our status has been the basis of many of our disputes with DOE. For much of the time that the Nez Perce Tribe has been certified as an "affected Tribe", DOE has not operated from a assumption of full participation for the Tribe; each issue, each question, has required a protracted effort by the Tribe to convince DOE of our rights. Much to its credit, and to the credit of vigilant Congressional oversight and the use of the appropriations process, DOE has begun to accept our view that "non-host" Tribes are entitled to the same degree of participation as "host" Tribes, and indeed, the same degree of participation of as host States. Throughout the last half of 1986, the Nez Perce Tribe and the Umatilla Tribes carried on a running debate with DOE regarding the Tribes' rights to request and receive impact assistance under Section 118 (b)(3). After several exchanges of correspondence and several face-to-face meetings meetings, DOE finally determined that the Nez Perce and Umatilla were in fact entitled to request and receive impact assistance under Section 118(b)(3). Similarly, a dispute arose in December 1986 regarding whether or not consultation and cooperation agreements with "non-host" affected Tribes could include provisions regarding each of the eleven items contained within Section 117 (c)(3). This issue was resolved favorably when by letter of February 13, 1987, Mr. Ben Rusche advised the Nez Perce Tribe that each of the eleven items was open for discussion in negotiations between the Tribe and DOE for a consultation and cooperation agreement.

Consistent with Tribal interests acknowledged under NWPA, and the responsibility assigned by NWPA, the Nez Perce Nuclear Waste Policy Act Program has defined carefully the role that it wishes to play in the NWPA process. Due to the existence of three other affected governments in connection with the Hanford Site, our program has been careful to avoid duplicating work more appropriately conducted by the State of Washington, the Confederated Tribes of the Umatilla Indian Reservation or the Yakima Indian Nation. We have attached to this testimony a narrative description of our tribal program.

Our program focuses on the potential effects of a repository at Hanford on the Tribe's ,members, reservation, and resources in the possessory and usage area established in the 1855 Treaty between the Nez Perce Tribe and the United States. To some extent, therefore, our program focuses less on the site itself than, for example, the program of the State of Washington. This approach is entirely consistent both with our interests as a tribal government responsible for the welfare of tribal members, now and in the future, and with NWPA's concerns with the impacts of the repository siting process and the treaty rights of Indian Tribes.

II. Objections to the First Repository Siting Process

Throughout the process of investigating, nominating, and recommending sites for characterization for the first repository, the Nez Perce Tribe has strived to maintain both the objectivity and the technical integrity of our programmatic efforts. We do not claim, of course to be objective in all respects. Given the choice of either having or not having a facility that may endanager natural resources on reservation and in the area in which the Tribe may exercise rights of possession and use, obviously we would prefer not to have it. We nevertheless have stated that if DOE can persuade us that no reasonable scenario exists under which dangerous levels of radioactivity will be released from a repository at Hanford, we will not exercise our right to disapprove the selection at Hanford.

In certain respects, of course, this is hardly a major concession on our part. If we are convinced that there is no possibility of harm to treaty resources, it would be both unethical , and more significantly, ineffective for us to exercise the right of disapproval. Unfortunately, a number of actions of DOE cause us to have a low level of confidence in DOE's evaluation of this critical issue.

Even prior to the enactment of NWPA, there was a Congressional and industry perception that DOE had a predetermined institutional preference for several sites in western states, including Hanford. It was therefore not surprising that Hanford was selected for characterization. DOE and others should likewise not be surprised that we believe that regardless of the work preliminary to site characterization, Hanford was selected for non-scientific institutional reasons. In effect, the very thing the House Report on H.R. 3809 focused on - politicalization of what should scientific decision-making - had come to pass.

Not being privy to the deliberations of the Department in nominating and recommending sites for characterization, we cannot provide an exhaustive list of the institutional reasons for the selection of Hanford. Those reasons, however, certainly must include the fact that a large number of DOE personnel and DOE contractors already were at the Hanford site.

This is not to say, that we have identified at this early date factors that disqualify Hanford from consideration as a repository site. What we are saying is that, of the five sites recommended, Hanford clearly is the site most likely to be disqualified during the characterization process. DOE was well aware of this fact when it recommended Hanford for characterization; so aware, in fact, that it was necessary for DOE to systemically remove many negative references to Hanford from early drafts of the Multi-Attribute Utility Analysis (MUA) of the sites nominated for characterization for the first repository. DOE's justification for selecting Hanford despite its ranking last in both pre-closure and post-closure factors comes down to a claim that the "geological diversity" requirement of NWPA compelled the selection of Hanford. This claim is erroneous on at least two grounds. First, the Nuclear Regulatory Commission has made clear that the "geological diversity" requirement is met by the selection of sites representing two rock types; it was not necessary to have three rock types. Second, if DOE's interpretation of the diversity is accepted, then Hanford and Yucca Mountain had to be selected from the issuance of the first area reports, in that they were the only non-salt sites under consideration. Evidently, DOE is asserting that, even if the tuff or basalt sites had shown likely disqualifying factors during preliminary investigations, they nonetheless would have to have been selected for characterization.

Our concerns are heightened by the scholarly criticism of the selection of Hanford by experts not associated with any State or Tribal program. Indeed, the strongest criticism of the first-round site selection has come from people involved in the preparation of the MUA and the review of the site selection methodology by the National Academy of Sciences. Professor Ralph L. Keeney of the University of Southern California critiqued the DOE decision in the monograph entitled "An Analysis of Portfolio of Sites in Sites to Characterize for Selecting a Nuclear Repository." In his analysis, Professor Keeney conducted a "portfolio analysis" for selecting sites for characterization concluding that Hanford should not be characterized.

Similarly, Professor Detlof Von Winterfeldt, who participated in the review by the National Academy of Sciences of DOE's methodology for siting the first repository, reported to Mr. Rusche that:

> In brief, I believe that the conclusions drawn in the recommendation report are based on selective and misleading use of the analysis prescribed in the methodology report [MUA]. It is extremely hard to find in the methodology report any support for the selection of the specific set of three sites recommended for characterization. Instead, I find a convincing analysis that clearly rejects the Hanford site, and furthermore supports the selection of the Richton Dome site over the Deaf Smith site. The way the methodology report was interpreted in the recommendation report, in my opinion, comes very close to a misuse of an otherwise excellent analysis.

These criticisms leave us concerned that DOE selected Hanford regardless of the unfavorable results of the preliminary investigation. This in turn leads us to believe that, if DOE already has decided that it wishes to construct a repository at the Hanford Site, it is going to do so regardless of the outcome of the scientific investigations mandated by the NWPA. We have little confidence in the objectivity of DOE's conduct of technical investigations of the sites. The selection of Hanford clearly indicates that the program is not driven strictly by scientific considerations. However, we may wish to characterize the considerations that led to the selection of Hanford, quite clearly those considerations were not scientific.

Our concern is intensified by the fact that DOE has announced that its "working hypothesis" that each of the sites being characterized is in fact acceptable and licensable by the NRC. By assuming that a site is acceptable before the detailed work has begun, DOE may be preordaining its conclusion. This assumption also underlies proposals to amend the NWPA to provide but one site for characterization for the first repository.

The danger of this assumption is all the more genuine in light of the NRC staff comments on the Environmental Assessments issued for the first three-round sites. A general criticism by NRC staff of the DOE program is that DOE consistently fails to use conservative assumptions in carrying out its technical studies. Given the profound danger posed by the potential releases of high levels of radioactivity the very least that we can ask is that DOE proceed conservatively in its investigations. DOE's "can do" attitude simply must not be allowed to prevail over serious concerns relating to the health, safety and welfare of the human beings in the area of the proposed repository.

Among the comments from the NRC staff on the Environmental Assessment of the Hanford site were the following:

(1) The analysis presented in the final EA on natural resources does not consider available geothermal information.

(2) The existing limited data on potential fault activity supports the view that faulting may exist at or near the Reference Repository Location.

(3) The final EA did not take into consideration the potential impact of microearthquake swarms on the tectonic suitability of the Reference Repository Location.

(4) The high level of confidence DOE assigns to its finding that groundwater travel time at Hanford will exceed one thousand years is inappropriate due to the limited hydrogeologic data base.

These concerns, when combined with DOE"s non-conservative approach and our belief that considerations other than scientific may be controlling the site selection process, cause us profound doubt, as to the impartiality of DOE's scientific program. As noted previously, investigations have not come to the point where disqualifying factors can be identified with confidence. Given what already is known about Hanford, we believe it clear that Hanford is more likely to be disqualified than other sites not recommended for characterization. In the face of criticism of the selection of Hanford, DOE must find a way to redeem its choice. We are deeply concerned, therefore, that the DOE scientific program will be designed not to discover such disqualifying factors.

We are further concerned that DOE will attempt to limit our investigations of potential disqualifying factors. Delays in DOE's processing of the Tribe's grant application, for example, have prevented us from carrying out important environmental data collection in a timely manner. The consistency of the pattern of bureaucratic inertia leaves us believing that DOE is intentionally hampering our investigative efforts through the grant process. Another example invloves the Tribe's plans to investigate the potential for human interference with the Reference Repository Location arising from oil and gas exploration and the possibility of oil and gas reserves in the Pasco Basin. DOE has resisted our efforts in pursuing this investigation.

In summary, we doubt the impartiality and the scientific bases of DOE's decision-making. DOE has prevented us from carrying out our independent investigations. If the first siting process survives judicial review and continues in past fashion, DOE faces a virtually certain notice of disapproval in addition to well-armed opposition in licensing proceedings.

III. Institutional Relations

In many respects, the current difficulties that the program has experienced might have been avoided had DOE taken a proper view of how relations were to be carried on with Affected Tribes and States. We do not underestimate the difficulty of involving Tribes and States in the repository siting process. Such involvement, however, is mandatory and we are most disappointed with the way that DOE has carried on these relations during the site selection process.

The most gross example, to date, of the Department's failure arose with the Secretary's May 28, 1986 decision. At a meeting Albuquerque only six weeks earlier, DOE representatives had promised the Tribes and States at least 15 days notice of the release of the EAs and promised to try to give 30 days notice. As you are probably aware, the Tribes and States were not given 15 days or 30 days notice; they were given 30 minutes notice.

Moreover, we were never given any indication that a postponement of second repository work was under consideration. Given the very significant role Congress established for the Tribes and States, it is inconcievable that DOE would make such a decision without at least advising us that the matter was under consideration. The result of the illegal postponement of the second repository and the failure to adequately involve Tribes and States in the first round site selection process is the approximately 40 lawsuits now pending against DOE. Another and perhaps more profound result of DOE's illegal decision making has been to threaten the underlying balances built into NWPA, what House Interior and Insular Affairs Committee Chairman Moe Udall termed "a fair and balanced process to achieve a permanent solution to the nuclear waste problem." Critical to that process and regional equity has been the two repository approach requiring an objective nationwide search and selection of sites.

Recent developments have softened our views to some extent. The positive resolution of the impact assistance and Section 117(c) issues has given us some confidence that the Department has the capability of being fair and reasonable in its relationship with the Tribe. We attribute this improvement to the personal interest that Mr. Ben Rusche has taken recently in the tribe's concerns, as well as the ascension of Stephen Kale to the position of Director of the Office of Geologic Respositories within DOE. These recent improvements have directly led to our willingness to engage in negotiations for a consultation and cooperation agreement with DOE.

Nevertheless, these improvements only carry so far. The fact remains that the postponement of the second repository is illegal and seems based on political and not scientific considerations. We will continue to mistrust the Department unless and until that decision is reversed and site-specific work on the second repository resumed. NWPA calls for contemporaneous investigations of both repositories. We can not accept anything less without sacrificing the interests of our own constituents.

All that the Tribes and States have asked is that DOE carry out the spirit and letter of the NWPA. We continue to believe that the process established by the Act is scientifically and fiscally sound, fair to all affected parties, and, most importantly protective of the public health and safety. It is the implementation that has been flawed; badly flawed in our view, that we must return to an early point in the process and revisit each key programmatic decision. By doing so, the NWPA process can be salvaged without sacrificing the fairness and the profound regard for public health and safety embodied in the Act.

IV. Legislative Proposals.

Although S. 839 is not before this Committee, we feel compelled to briefly reiterate our criticisms of the proposed Nuclear Waste Policy Act Amendments of 1987. We testified on April 29, 1987 before the Senate Committee on Energy and Natural Resources that we consider the NWPA to be sound legislation and support forcing DOE to implement the Act properly. While we agree with the general proposition that compensation should be provided to the Repository States and Affected Tribes, such compensation should not be used as an anesthetic to substitute a facade of cooperation for the tough adversary process that is the NWPA. A process that Congress designed to assure that the Repository site selection meets all the necessary health and safety requirements of generations to come.

We are also opposed to the bills in the Senate and the House (S. 621, S. 642, H.R. 509, H.R. 1185, H.R. 1252, and H.R. 1324) that would amend NWPA to delete the requirement of a second repository for the disposal of high level radioactive waste and spent fuel. The NWPA represents a Congressionally crafted balance of many competing interests; not the least of which was the element of geographic balance and equity. To remove the second repository from the NWPA, leaves one region of the country as the major producer of wastes, while another region takes on the responsibility for disposal; an inequitable situation.

The Nez Perce Tribe is studying the various Monitored Retrievable Storage Facility (MRS) proposals and is not at this time prepared to comment on S. 1141, and S. 1211.

The legislative proposal that, to date, tracks many of our views of the NWPA process is H.R. 2189, introduced by Mr. Swift (D-Wash.) and twenty-one other members of the House of Representatives. There is no companion bill in the Senate. This legilsative approach would place a moratorium on Repository land acquisition or site characterization and replace DOE with an independent agency that would redo the process of developing siting guidelines, site selection, and second repository evaluation. This approach is consistent with the thrust of our testimony which is that the NWPA is good legislation that has been improperly implemented by DOE. An important caveat for any moratorium or freeze approach is that the role defined for Affected Tribes and States continue in place. The baseline data that is being gathered and the experience that Tribes and States have gained as participants under NWPA should be invaluable to an effective and impartial NWPA process.

NEZ PERCE TRIBE
NUCLEAR WASTE POLICY ACT PROGRAM
APRIL 29, 1987

Upon its designation as an "affected Indian tribe" under the Nuclear Waste Policy Act ("NWPA") in late 1984, the Nez Perce Tribe established its Nuclear Waste Policy Act Program to provide the scientific, legal, and administrative capacity to participate effectively in the nuclear waste disposal program. The Tribe's off-reservation possessory and usage rights area, acknowledged in the Treaty of 1855, extends over portions of Idaho, Oregon, and Washington, and includes the Hanford Site. These off-reservation treaty rights that are the basis for the Tribe's designation as an "affected Indian tribe" under the NWPA by the Secretary of the Interior.

During the period 1984 until May 28, 1986, the Program was in the "pre-characterization" phase of the first round site selection process. The Tribe's efforts focused on defining tribal rights under the NWPA, and preliminary studies of the Hanford Site and other candidate locations. Reviews were conducted and comments submitted on key Department of Energy ("DOE") program documents. Preparation and plans were made in the event that the Hanford Site was formally recommended for site characterization.

Immediately following the recommendation of the Hanford Site for detailed site characterization on May 28, 1986, the Program began preparations for its longer-term involvement in the characterization of the site at Hanford. Specific objectives are as follows:

- Continuing technical reviews and monitoring of site characterization and other programmatic activities of DOE, the Nuclear Regulatory Commission ("NRC"), and other federal agencies;
- Providing critiques, comments, and recommendations on federal plans and activities;
- Conducting independent evaluations of DOE's geological, hydrological, and environmental investigations at the Hanford Site;
- Performing independent assessments of the effects of the BWIP site characterization activities and repository development on the Tribe's people, environment, economy, culture, government, and public health and safety;
- Participating in intergovernmental planning, review, and decision-making processes at the regional and national levels;

- Providing for effective public outreach and information dissemination; and

- Negotiating a Consultation and Cooperation Agreement with DOE to define and govern the conduct of site characterization activities by DOE and the oversight role of the Tribe.

The Tribe's technical contractor staff consists of approximately 45 people, of which some 75% are professionals in the fields of geology, hydrology, environmental sciences, chemical and nuclear engineering, economics, regional planning, business administration, education, law, and radiological/health physics. This core group is supported by other part-time and full-time consultants in such fields as atmospheric sciences, geohydrology, mining engineering, archaeology, anthropology, socioeconomic analysis, radiologic/health physics, and other pertinent disciplines. This team has been involved in reviewing, monitoring, and evaluating the large body of scientific data and technical documentation generated under the NWPA, and has produced a number of technical reports, commentary, and planning documents to support tribal decision-making under the Act.

The Tribe's Program is also supported by legal counsel and a media/public information consultant firm. These consultants provide, respectively, legal services necessary to assist the Tribe in negotiating a Consultation and Cooperation Agreement (C&C) and policy analysis, and facilitating the development and dissemination of public information. The major subcontractors of the tribal Program are Indian-owned and operated.

Following the decision by the Secretary of Energy and the President on May 28, 1986, recommending the Hanford Site as one of the three sites for characterization, three major planning efforts were undertaken. First, a Comprehensive Program Plan was developed to guide tribal NWPA projects throughout the site characterization phase. Second, an environmental surveillance plan covering the characterization phase was developed. Finally, a plan for assessing socioeconomic and cultural impacts was developed.

These plans involved extensive consultations between tribal and DOE personnel over a 10-month period. The environmental and socioeconomic assessment plans provide for the conduct of inpedendent tribal impact studies to be performed consistent with similar DOE impacts evaluations, as authorized under the NWPA.

Another major project of the Nez Perce Program is the analysis and monitoring of site characterization activities by DOE. To facilitate effective monitoring of the BWIP at Hanford throughout the site characterization phase, the Nez Perce Tribe and the Confederated Tribes of the Umatilla Indian Reservation entered into a mutual assistance agreement which provides for a full-time on-site representative at Hanford. An office was established in Richland, Washington in mid-1986.

Tribal comments on DOE site evaluation activities have raised concerns about the adequacy of DOE efforts regarding: (a) possible oil and gas reserves in the Hanford area; (b) planned hydrologic testing; (c) off-site environmental impacts within the Tribe's possessory and usage rights area; (d) quality assurance programs at Hanford; and (e) impacts associated with transportation of spent fuel and other high-level radioactive wastes through the Tribe's reservation and treaty rights area. Some progress has been made in recent months in persuading DOE that its plans for site characterization and impact assessment activities need to be revised substantially so as to encompass all credible scenarios associated with repository and transportation operations. The Tribe believes that DOE's schedule-driven approach to site characterization may prevent the necessary comprehensive drilling, in-situ, and other testing programs.

The Tribe, unfortunately, has encountered substantial problems in its recent dealings with DOE concerning funding of tribal activities. These issues have had a major adverse effect on the Program. The Tribe submitted its strategic plan and detailed project plans, together with its request for grant funding for FY 1987, to DOE during September and October 1986. These documents were submitted in accordance with DOE's guidelines and timetable for grant application review and with the understanding from DOE that funding would be available for implementing all relevant site characterization-related activities. DOE subsequently issued a "preliminary determination" in late 1986 that the Tribe was ineligible for impact assistance funding under the Act and, therefore, independent tribal impact assessment activities leading to issuance of a tribal "impact report" were likewise ineligible for funding. This action was counter to previous statements and policy actions by DOE and resulted in denial of funding for implementing two major tribal projects (environmental and socioeconomic assessments), the planning of which had been funded in FY 1986.

The Tribe prepared a legal analysis refuting this DOE position and communicated its strong opposition to this interpretation of the NWPA. Subsequently, in January, 1987, DOE reversed its position, declaring that the Tribe was indeed eligible for such impact assistance funding. Although this decision should have cleared the way for immediate DOE approval of funding for all eight tribal projects planned for FY 1987, Such has not been the case. While substantial agreement has been reached concerning the eligibility, scope, and timing of tribal projects during FY 1987, the Tribe has continued to encounter problems in receiving authorization to initiate its full program of work.

If funding is not secured to provide these much-needed technical resources within the next 30 days, it is likely that the Tribe will not accomplish its objectives in such important milestone events as review and analysis of DOE's Site Characterization Plan, Cultural Resources Research Plan, Environmental Monitoring and Mitigation Plan, and Socioeconomic Monitoring and Mitigation Plan, not to mention other major on-going DOE and NRC activities. Equally important, substantial delays in the detailed planning and implementation of the Tribe's independent environmental, socioeconomic, cultural, and other assessment projects are being unnecessary delayed by lack of funding approval by DOE.

The Tribe has made diligent efforts to conduct its technical projects in accordance with NWPA milestones and schedules. It has also made every reasonable effort to accommodate the DOE Richland Operations Office in its reviews of several tribal grant applications for FY 1987 funding. To date, however, the Tribe has been limited to funding on a quarterly basis only at the FY 1986 "pre-characterization" level - not at the level of effort required in FY 1987. Clearly, DOE has unnecessarily inhibited the ability of the Tribe to participate effectively in the NWPA program.

TESTIMONY OF THE
CONFEDERATED TRIBES OF THE UMATILLA INDIAN RESERVATION
BEFORE THE
SENATE ENVIRONMENT AND PUBLIC WORKS COMMITTEE
SUBCOMMITTEE ON NUCLEAR REGULATION

JUNE 2, 1987

Mr. Chairman, and Members of the Committee, my name is Bill Burke and I am a member of the Umatilla Tribe and the Director of the Umatilla Nuclear Waste Study Program. I appreciate the opportunity to appear before you today to testify on behalf of the Tribe concerning the current status of DOE's civilian nuclear waste activities. While you have already heard of the many disagreements affected parties have with DOE, and you will hear more from me in a minute, we do seem to agree on one thing: the nuclear waste repository program is in need of Congressional review and direction. We submit this testimony so that the Subcommittee may be aware of and consider the views of the Umatilla Tribe in your deliberations on reviving the repository program you so carefully crafted in the Nuclear Waste Policy Act (NWPA).

I. INTRODUCTION

The Umatilla Tribe has been an active participant in the process to site the first nuclear waste repository mandated by the Nuclear Waste Policy Act (NWPA) since 1983. In that year the Tribe petitioned and received from the Department of the Interior certification of its status as an "affected Indian tribe" because of the potential for significant and adverse impacts to the

Tribe's off-reservation treaty rights if Hanford were selected as a repository. These rights include the right to fish at usual and accustomed stations on the Columbia River and its tributaries, many of which are in the vicinity of the Hanford Reservation, and the right to hunt, graze cattle, and gather roots and berries on public lands off the reservation. I should also point out that the Hanford Reservation includes some of our aboriginal lands that we ceded to the United States in our 1855 Treaty.

The governing body of the Umatilla Tribe, the Board of Trustees, has the authority under our constitution to exercise and protect all existing and future Tribal rights arising from the Tribe's treaty, federal law and other sources. Of paramount importance to the Tribe is the protection of its reservation homeland and the Tribe's off-reservation treaty rights. The Umatilla Tribe is gravely concerned that a Hanford repository will impair or destroy the physical resources reserved by the Tribe in our treaty and promised to the the Tribe in perpetuity by the United States Govenment. This concern stems from the location of the Hanford site on the Columbia River and from the fact that the primary rail and highway routes to Hanford pass through the center of the Umatilla Reservation.

As a member of the Umatilla Tribe, I can assure you we are adamant in our demand that our land and our rights that have survived to this day be fully protected. When we signed our treaty with the United States Government in 1855, we ceded 6.4 million acres of aboriginal territory for a reservation of

245,000 acres. Because of the Allotment Act, the size of the reservation was reduced to 145,000 acres in the 1880's. Over half of the reservation lands are now owned in fee by non-Indians. What little land remains in trust is closely guarded by our people and our government. Equally important to our cultural traditions and economic vitality is the protection of the environment that provides our off-reservation rights to fish for salmon, hunt deer and elk, graze our cattle and gather the roots and berries which are used in our sacred ceremonies. We treasure our land; it is where our ancestors are buried, where our spirits dwell and where our hopes for our children are based. Therefore, the Umatilla Tribe, as an "affected Indian tribe" under the NWPA and as stewards of our land and resources, have made the oversight of DOE's repository activities at Hanford a high priority.

II. DOE HAS FAILED TO IMPLEMENT THE REPOSITORY PROGRAM AS CONGRESS INTENDED

A. Doe's May 28, 1986 Decisions.

1. Selection of Sites for Site Characterization for the First Repository.

The first anniversary of DOE's now infamous May 28th decisions has just passed, but the damage to the integrity of DOE's repository program caused by those decisions lingers. DOE's site selection process from first repository sites was guaranteed to incite the litigation and public mistrust that Congress sought to avoid.

The Umatilla Tribe believes the entire site selection process was flawed and the selection of Hanford best demonstrates those flaws. Our principle objections are:

a) The Hanford and Yucca Mountain sites were predetermined selections for characterization. Of the 9 sites DOE considered for the first repository, 7 were salt sites. The other 2, Hanford and Yucca Mountain, are located in volcanic rock formations, basalt and tuff. Because of DOE's blind reliance on the geologic diversity language in the NWPA, the only decision DOE had to make was choosing among the salt sites. In that Hanford was the only basalt site, and Yucca Mountain the only tuff site, thses sites were predetermined selections.

b) DOE misconstrued the need for geologic diversity in first repository sites. The NWPA does not mandate geologic diversity in each of the sites selected for characterization; the Act merely requires diversity "to the extent practicable". If DOE wanted to include consideration of the diversity issue in the site selection process, it should have been a factor in the Multiattribute Utility Analysis (MUA) where it could have been analyzed and weighted properly. DOE decided against such an analysis.

Furthermore, DOE removed language from early drafts of the MUA stating that selecting sites with the "maximum diversity in geohydrologic settings" and meeting the "NRC's minimum rock type diversity requirements" could be achieved without selecting Hanford.

c) DOE failed to adequately consult with affected parties or to include outside experts in selecting sites for characterization. The methodology for selecting sites proposed by DOE in the draft Environmental Assessments was criticized by numerous parties, including the National Academy of Sciences (NAS). In response, DOE determined that the MUA was a more appropriate methodology for assessing the qualities of each site. The affected states and tribes requested that they be allowed to oversee the implementation of the methodology and to participate in DOE meetings with the NAS concerning the methodology. DOE denied both requests. The NAS suggested that DOE use a panel of outside experts to assess its application of the methodology to the various sites. DOE disregarded the NAS suggestion as well.

d) DOE selected Hanford for characterization despite the fact their own MUA ranked Hanford as the worst site. Hanford had no competition for last place; it ranked last in both the preclosure and postclosure analyses. Hanford was also estimated to result in the highest releases of radionuclides to the environment, to have the greatest transportation impact and to be the most expensive repository to characterize and construct.

e) Finally, any remnants of integrity DOE's site selection process retained after the May 28th decisions were shattered by the release of Congressmen Markey and Weaver's report, dated October 20, 1986, which documented DOE's manipulation of the MUA and deletions of passages critical of Hanford. DOE attempted to justify its selection of Hanford in part by arbitrarily disregarding transportation impacts and repository costs despite language in the NWPA specifically requiring consideration of those factors in the site selection process. The Markey-Weaver Report also detailed the numerous deletions of passages critical of Hanford as the MUA evolved. One of the deleted passages stated: "There are no realistic assumptions about either proclosure or postclosure expected performance or about the values used to evaluate performance that can result in Hanford being anything but the last ranked site. And the significance of the performance differences between Hanford and all the other sites is substantial..."1/

These issues, among others, have destroyed the credibility of DOE's site selection process, especially in the Northwest. The voters of Washington and Oregon have overwhelmingly passed referenda requiring their states to oppose DOE's attempts to locate a repository at Hanford. Similarly, the General Council of the Umatilla Tribe has passed a resolution opposing Hanford's selection for characterization in large part because of the aberations in the site selection process. It is clear the public confidence Congress determined to be essential in the repository program has been spurned by DOE.

1/ Another argument advanced by DOE in support of its selection of Hanford claimed each of the 5 sites nominated for characterization were expected to perform "exceedingly well" in postclosure performance. The NRC does not share in DOE's assessment. Their review of the EA's led NRC to conclude that many of DOE's favorable findings on site conditions were "overly optimistic" and therefore DOE's conclusions concerning repository performance were viewed by the NRC as "optimistic".

2. DOE's Indefinite Postponement of the Second Repository.

DOE's decision to "indefinitely postpone" the second repository program was a clear demonstration of the Department's disregard of Congress' mandate in the NWPA. The decision not only violated the letter of the Act, it ignored the sensitive political compromise that permitted passage of the NWPA. DOE's violation of the Act was so blatent that Secretary Herrington has been forced to admit to this Subcommittee he was mistaken in his determination that a change in the Mission Plan could alter the mandatory requirements of the NWPA.

DOE's claim that their decision was based on projections of reduced waste volume and concern for cutting program costs were at the very least deceptive. Congressional inquiries into DOE memos relevant to the second repository postponement decision confirmed what we already suspected, that political expediency was a primary factor motivating DOE's decision. We see DOE's latest announcement that the second repository program will resume next October as a belated recognition by DOE of their obligations under the NWPA and as a blatent attempt to pressure Congressional representatives from second repository states to approve DOE's recent proposal to amend the Mission Plan.

B. Consultation and Cooperation Agreement Negotiations Issues.

1. Function of a Consultation and Cooperation Agreement.

In addition to maintaining a watchful eye on DOE's implementation of the national repository program and BWIP activities at Hanford, the Umatilla Tribe has been engaged in an important and often times frustrating exercise with DOE defining the level of participation and oversight authority Congress intended for affected Indian tribes in the NWPA. The Tribe has premised its involvement in the repository program on the view that our designation as an affected tribe authorizes us to participate on an equal basis with the affected states. It is clear that Congress intended the Consultation and Cooperation (C and C) Agreement to resolve these issues and for that reason the Tribe initiated C and C negotiations in July 1985. The principal concern of the Tribe was to ensure that the agreement recognized the treaty rights of the Tribe and that the Tribe had the authority to protect and preserve those rights throughout the repository program. In order to fully protect its treaty rights, the Tribe recognized it was critical that it take full advantage of the oversight role Congress legislated for affected Indian tribes in the NWPA. Congress designed the C and C Agreement to require DOE to recognize in writing the interests and concerns of each affected party, their oversight authority and the procedures for responding to the concerns and impacts identified by affected parties.

In early meetings with the DOE C and C negotiating team, Tribal representatives specifically stated they expected a negotiated agreement to result from a broad reading of the NWPA and one that recognized that the provisions of Section 117(c) set the floor for possible elements of a C and C Agreement, not the ceiling. The Tribe's claim that the NWPA should be interpreted liberally when ambiguities arose concerning the authority of affected tribes is in accord with the Ninth Circuit decision in State of Nevada ex rel. Loux v. Herrington, 777 F.2d 529 (9th Cir. 1985). In rendering its decision allowing Nevada to conduct independent tests prior to their site being selected for characterization, the court relied upon the legislative history of the Senate predecsssor bill to the NWPA which stated that affected parties "should be entitled to the broadest possible rights and opportunities to participate in the development of the [nuclear waste] facilities..." The court also determined that the general purposes of the NWPA and the independent oversight authority conferred on affected parties by Congress indicated a liberal interpretation of the Act was appropriate. We have met considerable resistance from DOE in seeking to apply the interpretive rules from the Nevada case in our C and C negotiations.

We decided to terminate our negotiations with DOE last January because of DOE's persistently narrow interpretation of our treaty rights giving rise to our affected tribe status and of the authority we have as an affected tribe under the NWPA. After a dozen formal and informal negotiation sessions over a 2 year period, we were unable to negotiate the difficult issues of tribal participation in and oversight of DOE's site characterization activities at Hanford because of the difficulty we have encountered persuading DOE of the fundamental rights reserved by the Umatilla Tribe in our 1855 Treaty and of the independent oversight authority provided by Congress in the NWPA. Negotiations were also terminated because of DOE delays in finalizing our grant for this fiscal year which has severely impaired my program from performing our statutory responsibility of overseeing DOE's repository activities and protecting the Tribe's interest. We are 9 months into FY'87 and DOE only finalized our grant last week.

Two issues arose concerning the interpretation of the NWPA that are illustrative of the opposition we have confronted. The first dispute arose over the eligibility of affected tribes to receive impact assistance if the tribe did not host the repository. The impact assistance issue stemmed from ambiguity in Section 118(b)(3). That section appears contradictory on the eligibility of affected tribes who do not host a repository to receive impact assistance. Section 118(b)(3)(A) requires DOE to provide "financial and technical assistance to any affected Indian tribe requesting such assistance and where there is a site with respect to which the Commission has authorized construction of a repository." DOE initially ignored this language and only cited subsection (B) which states that an affected tribe desiring impact assistance shall prepare a report to DOE "on any economic, social public health and safety, and environmental impacts that are likely as a result of the development of a repository at a site on the reservation or such Indian tribe." (Emphasis added.) DOE, therefore, preliminarily determined that the three affected tribes in the vicinity of Hanford were ineligible to receive impact assistance regardless of the damage a Hanford repository might inflict on the tribe's treaty rights.

A second dispute went to the heart of the agreement we sought to negotiate. Section 117(c) lists the issues Congress intended a C and C agreement to contain. While most provisions in that section expressly apply to states and tribes, several provisions omit reference to tribes. See Section 117(c)(5-8). In our C and C negotiations, we took the position that it made no sense to preclude tribal involvement in those subsections where tribes were omitted.

DOE initially agreed with our position. At the Institutional/Socioeconomic Coordinating Group (ISCG) meeting between DOE and affected parties held in St. Louis in June 1986, Barry Gale, from DOE Headquarters and Chairman of the ISCG, declared it was DOE policy that all subsections of Section 117(c) applied equally to states and tribes. At our C and C negotiations on July 9, 1986, Mr. Gale, who represents DOE Headquarters in our negotiations, repeated the DOE policy claiming that it was "obvious that Congress intended that section to apply equally to tribes as well as states."

Nonetheless, at an ISCG meeting in December 1986, DOE was uncertain about the application of Section 117(c) provisions to affected tribes and the issue was made an action item for subsequent DOE resolution. We viewed DOE's uncertainty on the applicability of Section 117(c) as a failure by DOE to live up to prior policy pronouncements and to commitments DOE negotiators have expressly made in our C and C negotiations. In addition, it was potentially another DOE interpretation of the NWPA that would have the effect of further curtailing the role of affected Indian tribes.

I am pleased to report that since we terminated C and C negotiations DOE has resolved these 2 issues in favor of the tribes. The Umatilla Tribe is encouraged by these DOE decisions and is in the process of reviewing whether it is in the Tribe's interest to resume negotiations. However, one thing is clear. If DOE continues to interpret the NWPA so as to narrowly construe the authority of affected parties, the C and C process will fail. In our experience, negotiations never got out of the starting gate because of the numerous obstacles DOE raised concerning the most fundamental issues of tribal participation in the repository program.

III. THE REPOSITORY PROGRAM NEEDS CONGRESSIONAL DIRECTION

While deliberating on the NWPA Congress struggled with the need for the safe disposal of nuclear wastes and the anticipated opposition to such a disposal facility by local residents and their state or tribal governments. In the hopes of avoiding this conflict, Congress crafted an important oversight role for affected states and tribes. Congress felt the participation of these affected parties in the repository program would promote public confidence in the safety of nuclear waste disposal. The consultation and cooperation requirements were designed to insure DOE responded to local concerns and met its statutory and regulatory obligations. Adherence to this process, it was hoped, would result in a site selection methodology for two repositories that was technically sound and, therefore, credible. The integrity and credibility of the site selection and characterization process would then result in repositories that were safe and, if not embraced by affected governments, would at least be acceptable.

All has not gone as planned and DOE is largely to blame. The selection of sites for characterization for the first repository, especially Hanford, sacrificed both the technical merit and the credibility of the Department's site selection decisions. The second repository postponement indicates that DOE is more responsive to political pressure than their obligations under the NWPA. Finally, DOE's poor performance in consulting with us in resolving even fundamental issues on the level of our participation in the repository program strongly suggests that we will be unable to resolve the more difficult issues we expect in the future.

As a result of DOE's flawed implementation of its responsibilities under the NWPA, the repository program has been brought to a virtual halt. In our view, reviving the program will require the following:

1. A new site selection procedure based on technical merit and a process whose objective is the selection of sites that provides maximum protection of public health and safety and the environment, not just suitable sites. And, while we feel financial incentives are appropriate when the "best" site has been found, we adamantly oppose any proposal that replaces technical excellence with financial incentives as the driving force behind siting decisions.

2. An independent analysis of projected waste volume from both civilian and defense sources is needed to determine the need and timing for a second repository. If the anyalysis concludes a second repository is unnecessary in the near term, fairness necessitates including crystalline sites for consideration in the first repository program.

3. Characterization of 3 sites should be maintained to insure that a technically superior site is chosen.

4. The independent oversight authority of affected state and tribal governments should be preserved. The involvement of affected governments remains essential to developing public confidence in repository facilities by insuring that DOE meets relevant statutory and regulatory requirements. We oppose any proposal which would dilute the vigorous oversight authority of affected parties in exchange for financial compensation.

Mr. Chairman, I speak for the Umatilla Tribe in telling you that we are prepared to work with this Subcommittee to make the repository program work as Congress intended. Reviving the stagnating repository program will require Congress to take corrective action to get the program back on track. We urge the Subcommittee to maintain their commitment to the independent state and tribal oversight of a repository program rededicated in its effort to locate nuclear waste facilities which will provide maximum protection to our people and our environment.

STATEMENT OF RUSSELL JIM
MANAGER, NUCLEAR WASTE PROGRAM
YAKIMA INDIAN NATION

before the

UNITED STATES SENATE
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
Subcommittee on Nuclear Regulation

Hearing on the Status of the
High-Level Radioactive Waste Disposal Program

June 2, 1987

Mr. Chairman, members of the Subcommittee--

My name is Russell Jim. I am Manager of the Nuclear Waste Program of the Yakima Indian Nation. I would like to thank you for this opportunity to present the views of the Yakima Nation about the status of the federal nuclear waste disposal program.

The Yakima Nation is an affected Indian tribe with respect to the proposed Hanford repository site in Washington State. The Yakima Indian Reservation is thirteen miles from the Hanford Site at the closest point, and most of the Hanford Site is on Yakima Ceded Lands. Under the Treaty of 1855 the Yakimas retain hunting, grazing, and food gathering rights on those Ceded Lands and fishing rights at usual and accustomed places on the rivers and streams which pass through them, including the Columbia and Yakima Rivers. It is on the basis of these treaty rights that the Secretary of Interior determined that the Yakima Nation is an affected Indian tribe under the Nuclear Waste Policy Act, and found that these treaty rights would be affected by the location of a nuclear repository at Hanford.

My testimony will first discuss an issue which should be of particular interest to the Subcommittee: the very different conclusions that are reached by the respective parties about the suitability of the recommended sites. State and tribal officials are convinced that the process that has been used to select sites for characterization--and the results of that process--are seriously flawed. Looking at the same information and process, experts who are optimistic conclude that there is no reason not to proceed with the sites recommended by DOE for characterization.

What is the basis for these differences in conclusions? All of the involved parties agree on one point: not enough is known about the sites at this time to make conclusive determinations about their suitability. The differences of opinion revolve around the appropriate degree of conservatism to use in making the assumptions that are necessary to fill in the gaps in our present understanding. DOE, which wants to justify its previous decisions about which sites to characterize, almost invariably makes optimistic assumptions. DOE is not really trying to find negative factors, so it is not surprising that they do not find them unless they are unavoidable. Consequently, DOE's conclusion is that, based on existing information, all the sites appear to be excellent, and very likely to be suitable for repositories.

The states and tribes are more skeptical. They ascribe more weight to the existing negative factors, and conclude that there is a good likelihood that the sites would not be found suitable. The NRC, whose ultimate responsibility it will be to determine whether the sites are suitable, takes a middle ground. They have identified many significant issues for the sites which must be resolved if they are to be found licensable. Significantly, the Commission's current presumption is that if these issues are not resolved, they could prevent licensing of any of the sites. In spite of this presumption, the Commission concludes that there is no reason not to proceed with characterization of the three recommended sites. Characterization is necessary, they say, to resolve those issues.

We disagree with the Commission about the implications of what is now known. The Commission, which is only moderately less optimistic than DOE, supports characterization of the recommended sites to attempt to resolve the potentially disqualifying issues. We hold the more conservative view that the adverse conditions at the sites are sufficiently serious to dictate their elimination from consideration.

The Commission should not be supporting characterization of the recommended sites when by its own admission there are potentially disqualifying conditions at all of them. We believe that a conservative program with a comprehensive national screening using truly selective siting guidelines could have identified numerous sites which the Commission could have endorsed more enthusiastically. Instead of having to say that significant issues could disqualify any of the sites, NRC should be able to say that it cannot identify any issues that would prevent licensing of the recommended sites.

We believe that sites could be found--at not significantly greater cost--that would satisfy these conditions. Such sites might be in basalt or granite, but they would not be in extremely complex geohydrologic settings, with plentiful flowing groundwater, adjacent to major rivers. They might be in salt beds, but they would not be under extremely important aquifers and prime farmland, or adjacent to pristine national parks. They might be in salt domes, but they would not be directly beneath towns. They might be in unsaturated tuff or other unsaturated rocks, but they would probably not be closely surrounded by potentially active earthquake faults. The sites that DOE identified essentially before the NWPA was passed have all of these problems and more.

DOE takes the non-conservative approach that it need not find the best sites, but rather only "suitable" ones. DOE looks at these sites and sees no significant problems. The NRC is also optimistic, although less so than DOE. The Commission looks at these sites, sees significant problems, and concludes that they should be characterized to resolve the problems. Tribes and states look at the sites, see the same problems, and conservatively conclude that since we could obviously do much better, we should do so.

Which approach should Congress accept? If public confidence in and acceptance of nuclear waste disposal are truly crucial to its success, as Congress declared in the NWPA, Congress should adopt the conservative approach of the states and tribes. The reason for this is simple: the American public does not share DOE's optimism about this enterprise. It is very skeptical about the ability of our institutions to safely manage and dispose of hazardous materials.

Because of its skepticism, the public will not accept nuclear waste disposal unless it is convinced that this activity is being carried out as carefully as possible. The people of the Yakima Indian Nation, and the public as a whole, want assurance that the federal government is truly working to find the best possible sites to dispose of these materials.

What they see instead is a program that refuses to accept the need for conservatism, and which could obviously have come up with a much better slate of sites. They see sites that are selected because the government already owns them, rather than because of their favorable geologic characteristics. They see that those sites have many common sense problems, like flowing groundwater, nearby rivers, valuable aquifers, and earthquake faults. They see the DOE doing a comparative evaluation of the sites, then choosing for characterization the site--Hanford--that ranks in distant last place for virtually all considerations. They see excessive optimism in all of the assumptions. All of this cumulative non-conservatism destroys public confidence that this program is being implemented adequately.

The advantages of a conservative approach hold true even if the scientific optimists are correct in their assertion that there are no significant technical impediments to successful waste disposal, but rather only perceptual, or political impediments. Even if perceptions are the only real problem, it should be apparent that the government and industry cannot alleviate the widespread perception that nuclear waste disposal is unsafe by simply asserting the contrary, and always making the most optimistic assumptions. Indeed, such a course of action only worsens public skepticism. Many observers who were initially willing to give DOE the benefit of the doubt have since become vigorous opponents of the Department's implementation of this program after observing it.

The Public Has No Confidence in DOE's Program

The Department has utterly failed to inspire confidence in its program. How can there possibly be any public confidence after revelations of internal DOE documents clearly revealing the baldly political basis for the postponement of the second repository siting process?

How can there be any public confidence in the integrity of DOE's program after the revelations that showed the manipulation of the site selection process for the first repository in order to keep the worst site--Hanford--in the running? Even DOE's analysis shows the marked inferiority of the Hanford site compared to the others. The Department's final documents acknowledge the last-place showing by the Hanford site, but casually brush it off as insignificant. But earlier internal drafts of the Decision Aiding Methodology and the Recommendation Decision show that Hanford's inferiority was not deemed insignificant by the technical experts who actually did the assessments. Those earlier drafts repeatedly concluded that the Hanford Site comes in last place under all reasonable circumstances, an assessment that has long been held by virtually all independent earth scientists, as well as many who have worked under contract to DOE. Such strong negative conclusions about Hanford were systematically deleted from the agency's final documents, the Weaver-Markey report reveals.

There can be no confidence in the integrity of DOE's decisions when the very decision analysis expert who assisted DOE in doing its comparative assessment publishes a paper absolutely refuting DOE's contention that the inferiority of the Hanford site is insignificant. That expert, Dr. Ralph Keeney, demonstrates that the value of the information derived from characterizing the Hanford site can only amount to a tiny fraction of the cost of characterization, even under the most favorable assumptions.

Another expert in decision science who was a consultant to the NAS Board on Radioactive Waste Management in their partial review of DOE's Decision Aiding Methodology, Dr. Detlof von Winterfeldt, also felt that the results of the analysis were badly abused by DOE in reaching the decision to include the Hanford site. He wrote a strongly worded letter of protest to Waste

Management Director Ben Rusche about it. DOE apparently sent an emissary to California to try to talk Dr. von Winterfeldt out of his embarrassing (to DOE) stance, but to no avail. He sent yet another letter reaffirming his view that the analysis clearly showed that the Hanford Site should not have been recommended for characterization.

DOE is asking us to ignore the results of its comparative analysis, which indicate Hanford is the worst site under consideration, and to accept instead the agency's premature determination that the site is "suitable" in an absolute sense. This is precisely the opposite of a conservative approach.

The potential confidence of the Yakima Indian Nation in DOE's claims of suitability of the Hanford Site must be considered in context. We who are neighbors of Hanford cannot look at the Department's actions in the civilian waste program in isolation. This is the same agency that has assured us for over 40 years that its operations at Hanford have been environmentally safe.

Yet we have learned in the past year of over 40 years of both accidental and intentional releases of radioactivity to the earth, the atmosphere, and the waters that are sacred to the Yakimas. This is the agency that for nearly three decades used the Columbia River for once-through cooling of its reactors, and that still releases highly radioactive primary coolant water from the N-reactor to surface ponds right next to the river.

This is the agency that for 30 years put liquid, high-level wastes in single-shell tanks just below the surface of the ground, and assured us that the practice was safe, only to have many of those tanks leak their deadly contents into the soil. Even worse, this is the agency that wishes to leave the remains of those single-shell tank wastes where they are--a permanent high-level waste repository just a few feet below the surface of the ground, and just a few miles from the Columbia.

This is the agency that has told us repeatedly that its N-reactor posed no threat to our environment. Yet when consultants hired by DOE to review N-reactor operations in light of the Chernobyl accident recently recommended either drastic safety improvements or immediate shutdown of the N-reactor, DOE decided to disregard the most important of those consultants' recommendations and implement only very limited repairs, which do not address serious safety concerns about hydrogen gas generation and radionuclide containment raised by their own consultants.

This is the same agency that permits enforcement of safety measures at its PUREX plant at Hanford to become so lax that vital criticality prevention regulations have been violated almost as a matter of course, and the facility has been repeatedly shut down because of accidents and safety problems. This is the agency that temporarily removes signs warning of contamination when the Governor comes through on a tour. This is the agency that this year has spawned an endless series of GAO reports harshly critical of the environmental practices at its facilities all over the country, and particularly at Hanford. This is the agency that has vigorously fought against the application of federal and state environmental protection laws to its facilities, and that continues to resist EPA and state enforcement of the Resource Conservation and Recovery Act with respect to those facilities.

In short, this agency has a recklessly cavalier attitude about its assumed privilege to abuse the Hanford environment. DOE acts as if Hanford were a permanent national sacrifice area, to be despoiled as the agency sees fit or finds convenient.

Under these circumstances, after this history of decades of hollow reassurances and regular environmental depredations at Hanford, how can the Yakimas, who hold that land and that river to be sacred, take any comfort in DOE's empty assertion that Hanford is "suitable" for a repository? Much more convincing--and meaningful--is the agency's weak acknowledgment that Hanford is the worst site of those considered. We must ask, did Congress go through the years of turmoil that were required to pass the NWPA just to have DOE squander its resources and its chances for success on the worst site?

The Consultation and Cooperation Process Has Failed

The Department has made a mockery of the consultation and cooperation requirements of the NWPA, and thus has utterly failed in the Act's objective of dealing early and meaningfully with the concerns of states and Indian tribes. The states and tribes have used their NWPA participation funds for serious, good faith reviews by qualified technical, policy, and legal experts of the DOE's studies, plans, and other documents.

But the Department has not dealt meaningfully with the concerns of the states and tribes, as required by the NWPA. The Department has never been willing to discuss its plans with the states and tribes before it reaches decisions. It has not adequately responded to our repeated requests for technical information. Indeed, the Department has not manifested the slightest willingness to have its program influenced substantively by any outside agency or party.

DOE's First Repository Site Recommendation Decision is Fatally Flawed

When Congress enacted the NWPA, it had reason to expect that, if not the very best, certainly one of the best sites in the nation from the standpoint of geologic considerations would be chosen for the first nuclear waste repository. How has it happened that Hanford, which would be on no objective geologist's or hydrologist's short list of possible sites, is one of DOE's three chosen locations? In our view, the objectives of Congress have been perverted because, rather than attempting to select the best site, DOE, aided by contractors who have a huge economic interest in having their site stay in the running, is bent on proving all the first-round sites acceptable so that the agency's maximum "flexibility" can be maintained.

One of the best examples of the failure of DOE's conduct of the repository siting program is the contortions the agency goes through in order to keep the Hanford Site among those recommended for characterization. The suitability of Hanford for a repository has long been questioned by most knowledgeable observers and most earth scientists. The National Academy of Science Board on Radioactive Waste Management, DOE's own BWIP Hydrology/Geology Overview Committee, the U.S. Geological Survey, and many highly-respected individual scientists from those organizations and the Nuclear Regulatory Commission have all at various times expressed their serious technical misgivings about the suitability of a site in totally saturated, highly fractured, highly-stressed basalt rock just a few miles from one of the nation's most important rivers. Hanford is the only site where the repository would be totally saturated in groundwater within a very short time after repository closure.

Even DOE's much-touted "Decision Aiding Methodology" could not avoid ranking Hanford dead last among the nominated sites for both postclosure and preclosure guidelines. DOE's analysis shows that:

-- Hanford has the worst expected postclosure performance by at least a factor of 50.

-- Hanford has by far the greatest uncertainty associated with its projected postclosure performance.

-- Hanford ranks fifth (last) in overall pre-closure considerations, far behind the other four sites.

-- Hanford is expected to be by far the most costly site (by over $5 billion) in terms of both repository and transportation costs.

-- The Hanford site would have the greatest occupational risks to repository workers by far.

DOE is able to recommend Hanford for characterization in spite of its distant last-place showing in the comparative analysis only by engaging in three serious and illegal distortions of the site selection process:

1) DOE brushes off Hanford's vast inferiority in projected post-closure performance, in violation of the NWPA requirement that detailed geologic considerations should be the primary selection criteria;

2) DOE totally discounts cost and transportation considerations in flagrant violation of the NWPA; and

3) DOE elevates "diversity" of rock types to the primary selection criterion, totally overwhelming consideration of technical merit, also in violation of the NWPA.

Hanford Postclosure Inferiority

DOE's post-closure performance analysis yields the significant result that radioactivity releases from the Hanford Site to the accessible environment are projected to be higher by at least a factor of 50 than all the other sites. But DOE dismisses the significant inferiority of the Hanford Site because supposedly even Hanford radioactive releases will be orders of magnitude below the EPA standards. In other words, DOE dismisses this large comparative difference on the basis of its projection of absolute excellence for all the sites. (DOE gives all the sites scores above 99.7 on a scale of 1 to 100. The contention alone that all the sites are so close to perfection and so close together should be sufficient to reveal the absurdity of this analysis.)

DOE acknowledges that there is great uncertainty in its preliminary projections of postclosure performance at the sites. If, as we believe, DOE is greatly over-optimistic about releases at all the sites (that is, if all the sites are worse than DOE thinks--a distinct possibility according to USGS and NRC), then the actual Hanford releases could be at or above the EPA standards, while the other sites would still be orders of magnitude below them. It does not require much thought to realize that the margin for error and, thus, the margin of safety, is much less for the Hanford Site than for the other sites. Beyond this, DOE acknowledges that the uncertainty about performance at the Hanford Site is actually much greater than at all other sites, because of the complex geologic and hydrologic environment at Hanford. Therefore, the possibility that they are way off in their performance projections is the greatest at Hanford.

Obviously, it is grossly non-conservative from a geologic perspective to dismiss this large difference in the margin of safety among the sites. Since section 112(a) of the NWPA requires that detailed geologic considerations should be the primary criteria for the selection of sites, DOE's decision is clearly inconsistent with the NWPA.

Hanford Preclosure Inferiority

In order to justify its selection of Hanford, DOE simply ignores relative costs, which are much higher for Hanford than for the other sites. While DOE's siting guidelines call for cost considerations to be given the least weight among pre-closure guidelines, DOE is able to get Hanford to rank in the top three in pre-closure considerations only by ignoring costs completely.

This is not permissible under the NWPA. Section 112(a) requires the siting guidelines to "take into consideration the proximity to sites where high-level radioactive waste and spent nuclear fuel is generated or temporarily stored and the transportation and safety factors involved in moving such waste to a repository." This section also requires the Secretary "to consider the cost and impact of transporting to the repository site the solidified high-level radioactive waste and spent fuel to be disposed of in the repository and the advantages of regional distribution in the siting of repositories." Clearly DOE may not ignore cost considerations under the Act, but that is precisely what the agency had to do in order to rationalize its recommendation of the Hanford Site for characterization for a repository.

The Department takes exactly the opposite approach to cost considerations in the Draft Environmental Impact Statement for Disposal of its Hanford Defense High-Level Wastes. In that context, where the agency seeks to justify its desire to exempt most of that waste from the repository disposal requirement, DOE seems to feel that cost considerations are extremely important. It would be valuable to hear the Department explain why costs are so overwhelmingly important when it comes to selecting alternatives for defense waste disposal, but not important at all (a $5 billion difference is dismissed) when it comes to selecting among alternative repository sites.

Moreover, in order to rank Hanford first in pre-closure considerations after ignoring costs, DOE unjustifiably underestimates environmental and socioeconomic effects at Hanford relative to the other sites. For example, DOE virtually ignores the tribal issues of greatest concern to the Yakimas such as loss of access to and desecration of Indian religious sites, damage to archaeological resources, effects on Indian subsistence lifestyle, and the tribe's extraordinary cultural risk-aversion with respect to environmental threats to the land, the fish, and other natural resources that are central to their religion and their way of life. These are issues we have raised repeatedly in every possible forum to DOE. It is insulting and, we believe, unlawful, for these issues to be so cavalierly brushed aside.

Undue Emphasis on Rock Diversity

The NWPA calls for the recommendation of sites in diverse geologic media only to the extent practicable. Diversity can be a useful consideration in distinguishing among comparable sites, but should not be used as an excuse for the selection of inferior sites. If fractured, stressed, saturated basalt adjacent to a major river were comparable to the other site types in terms of geologic performance measures, diversity might be an adequate basis for its selection. In fact, even DOE's analysis shows that the basalt site is significantly inferior to the other sites in both post-closure and pre-closure considerations. Even giving due weight to the advantages of diverse media, the "suite" of sites for characterization is manifestly not improved by including in it the site which has by far the greatest uncertainty associated with it (in spite of the vastly greater study that has occurred there relative to the other sites), and which is obviously by far the least likely to prove suitable of all those considered.

Well before Congress spoke on the subject in comprehensive legislation, DOE had decided that it would be convenient to put a repository at Hanford, since DOE already controls the land, and employs a large number of persons in the area. Geologic considerations had next to nothing to do with the choice. It is beyond serious dispute that, were the geologic suitability of the site the main criterion, Hanford would be on no-one's list of top choices for a repository.

In the draft EAs, DOE attempted to justify selection of Hanford on the absurd argument that Hanford was one of the three best sites. Reality has intervened at least to the extent that the agency has now dropped that rationale. Now, in the Final EA and its accompanying documents, DOE still recommends Hanford, in spite of a newfound admission that it is the worst site considered. This time around, the Hanford Site is a winner on the basis of a legally improper over-emphasis on rock "diversity." That the rationale keeps changing while the decisions remain the same is a good indication of the kind of science that undergirds decision-making in this program.

Conclusion

To conclude, we observe that the present opposition of tribal and state governments to the nuclear waste program is simply a reflection of the views and concerns of their citizens. So long as the people see a program that is based on excessive optimism (which they do not share), and that rejects the need to try to find sites for repositories that are among the best that can be found, they will not accept the program as safe. Consequently, their tribal and state governments will reflect that skeptical attitude, and it will be very difficult for the program to succeed.

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Statement of Bob Fulkerson, Citizen Alert Executive Director, before the Senate Nuclear Regulation Subcommittee's oversite hearing on high level nuclear waste

June 2, 1987

Greetings. My name is Bob Fulkerson. I am the Director of Citizen Alert and a fifth generation Nevadan. I appreciate the opportunity to speak to you today. Citizen Alert is a statewide membership organization founded in 1975 in response to citizens' concerns about a federal proposal for high level nuclear waste storage at the Nevada Test Site.

Since becoming the nation's testing ground for nuclear bombs in the 1950's, Nevada has been thought of by many problem solvers as "the nuclear state." It is a desert land crossed by more mountain ranges than any other state. It's people are few (about one million). The US Department of Energy's (DOE) proposal to dispose high level nuclear waste is the latest attempt to solve national problems at the expense of Nevadans.

Nevada is under prime consideration for this dubious honor despite the fact that the DOE plans to continue nuclear testing less than 30 miles from the proposed site. Nevada is also a finalist because the program has been guided by political considerations, such as federal land ownership, instead of technical considerations such as geologic stability. Based on the DOE's performance to date, this process will inevitably lead to a politically safe, albeit technically marginal, location for the repository.

The technical adequacy of Yucca Mountain has been under attack by independent and government scientists for years. These concerns center on the active geology of the area, an issue which DOE has ignored. For example, in the Yucca Mountain draft Environmental Assessment (EA), we are told and even shown diagrams that Yucca Mountain is very near to or in a belt of earthquake activity, depending on where you draw the line. We are also told that Yucca Mountain is virtually surrounded by fault lines. Yet the conclusion is drawn by DOE that the likelihood of disturbance is not great enough to worry about.

Nearly ten years ago, in 1979, the National Academy of Sciences (NAS) warned DOE of the potential difficulties associated with tuff as a geologic medium for radioactive waste disposal. There were several fundamental issues which should have been addressed before major resources were committed, NAS warred. These issues included the seismic and volcanic stability of the area, significant lateral variations in the thickness and character of tuff, the fact that tuff terrains are typically broken by faults into blocks of varying size, the stability of tuff in the presence of hot electolyte solutions, and the possible presence of natural resources. Yet the Guidelines permit DOE to presume the site suitable for characterization until it is proven otherwise.

Technical evidene suggests several conditions which could disqualify the site:

1) Tectonics

The Guidelines indicate that a site shall be disqualified if fault movement or other ground motion would result in a loss of waste isolation. State scientists have found that a large earthquake with accompanying surface faulting could probably occur within the lifetime of the repository, with the possible result being a loss of waste isolation. Regional studies published by the US Geological Surgey (USGS) show that Yucca Mountain lies within an area of high seismicity and should be considered seismically active. Evidence also indicates fault movement as young as 3000 years. Even the Nuclear Regulatory Commission, in its comments on the Yucca Mountain EA, indicated DOE's assumptions about the lack of potential for active faulting were overly optimistic. "At least portions of the Yucca Fault may have had natural movement as recent as 1000 years ago," the NRC stated. There is a significant body of evidence indicating that earthquake activity could occur with the resulting loss of waste isolation.

2) Geohydrology

The Guidelines indicate that a site shall be disqualified if the groundwater travel time to the accessable environment is less than 1000 years. Even DOE admits that the unsaturated zone in tuff is poorly known. But the EA indicates groundwater travel time ranges between 20,000-50,000 years. NRC staff, in commenting on the Yucca Mountain EA, questioned this assertion. "Many assumptions, hypotheses and approaches used in the analysis did not incorporate uncertainties associated with available data," the NRC stated. The Desert Research Institute found that the groundwater travel time could be as quick as 900 years, which would disqualify the site for not meeting the geohydrolgic requirement.

3) Water Quality and Quantity

The Guidelines indicate that a site should be disqualified if activities associated with the repository would degrade water quality or reduce water quantity. Again, DOE asserts that water use would not lead to these conditions. Recently, there have been several examples of how the repository could fatally exacerbate water scarcity in the area. The USGS found that water levels declined as much as 27 feet in two areas in Amargosa Valley between 1962 and 1967. In 1970, because of a declining water table, the State Water Engineer stopped issuing permits for irrigation in the Pahrump Artesian Basin. A well in Ash Meadows along the east side of the Amargosa Desert caused substantial reduction in the water level in nearby Devil's Hole, thereby threatening the existence of the already endangered Devil's Hole Pupfish. Clearly, a measurable increase in water use associated with the repository could cause a harmfully significant drawdown of the regional water table.

4) Off-Site Installations

The Guidelines indicate a site shall be disqualified if atomic energy defense activities conflict irreconcilably with repository activities. There is only one place in the country where we can be absolutley certain that ground motion will occur in the near term. The next logical step? Put a high level nuclear waste dump right next to it. USGS studies suggest that nuclear explosions have already induced tectonic strain on north northeast trending faults, and that the Yucca mountain faults may be tectonically strained to the rupture point.

According to DOE, whatever conflicts between weapons tests and the repository could be handled through engineering design and coordination of testing and repository schedules. DOE's track record of predicting the reaction of the geologic environment to underground nuclear weapons explosions is not good. There have been serious problems with three of the last six tests conducted on Rainer Mesa. During the April 10, 1986 Mighty Oak test, heat and radiation leaked past containment doors and destroyed about $35 million worth of diagnostic equipment, and resulted in the worst off-site radiation release since the notorious Baneberry test sent mushroom clouds 10,000 feet high, carrying radiation into Canada. Another test 1100 feet below tuffacious Rainer Mesa caused the ground to collapse three hours after detonation, injuring 14 workers, one fatally. (Midas Myth/Milagro test, February 15, 1984.)

Even DOE planners tacitly admit that activity at the test site could unpredictably affect conditions at the repository, since no workers would be allowed into the underground waste facility "for safety reasons." DOE's shortsightedness on this potentailly disqualifying condition is shown on page 6-36 of the EA: "No new industrial or defense-related activities are planned in the vicinity of Yucca Mountain." At the time that was written, the EMAD facility on the test site was a leading contender for a proposal to develop nuclear devices to power space stations. Presently it is estimated that the development of Star Wars will require hundreds of additional tests of nuclear devices over the next 10-20 years. Areas close to Yucca Mountain could be likely locations for future testing, increasing the intensity of tectonic stress on Yucca Mountain faults.

There is also evidence pointing to geothermal activity in the Yucca Mountain area, based on the discovery of calcite silica deposits. The hot water from geothermal springs produces brine that could disintegrate waste cannisters. The existence of geothermal activity at Yucca Mountain could make the site the worst the nation could choose.

Last year, serious questions regarding the validity of the geologic data being collected at Yucca Mountain arose when USGS issued a stop work order in the absence of a quality control program. Since 1979, USGS had been studying Yucca Mountain without a quality assurance program, which could render its data inadmissable for NRC licensing. The action was precipitated when a scientist at Los Alamos asked the USGS core library to verify the location of a core sample he'd been studying. USGS could not do this. In fact, USGS could not guarantee that any sample in the core library was from the specific location stated. It was found that the core samples were thrown into the back of a truck, without sufficient effort being made to catalogue them to prevent mixups.

DOE's overly optimistic assumptions about technical uncertainties, combined with the shoddy manner in which the data has been gathered, indicated DOE will not be able to prove the site is fit for NRC licensing.

That a flawed program should yield such a technically unsuitable site should come as no surprise.
We realize, of course, that we've been playing in a rigged game from the beginning. The Guidelines, the rules of the game, were written so that Yucca Mountain would not be disqualified. This is the basis for widespread criticism that DOE selected Yucca Mountain for political reasons and then set out to "prove"that the site was geologically suitable in subsequent studies.

This worst fear was confirmed by a House Energy and Commerce Subcommittee report, issued October 21, 1986. Their investigation found that DOE's internal documents suggested "DOE has decided on the three sites prior to completing the methodology report, and then tailored the methodology report to justify the final decision." DOE employed the criterion of rock diversity as an overrriding concern in the ranking methodology. This guaranteed both Hanford and Yucca Mountain would be selected, because Hanford was the only basalt site and Yucca Mountain the only tuff site under consideration.

There appears to be an erroneous assumption that Nevada is willing to accept the dump, based on the perception that we already have the test site and the area is already contaminated. First of all according to the EA, the Yucca Mountain site would require a 50,000 acre land withdrawal. Most of this would be public land, and none of it has been radioactively contaminated. The implications of becoming a dumpsite of this magnitude has resulted in an unprecedented amount of public outcry, which has been manifest in a variety of ways. A recent (December, 1986) statewide poll revealed that 79 percent of Nevadans agreed that the state "should do everything in its power to prevent the locating of a high level nuclear dump in the State." Additionally, the following organizations have passed resolutions of opposition:

Las Vegas City Council (12/27/84)
Clark County Commission (1/8/85)
Reno City Council (1/14/8)
City Council of Boulder City (2/12/87)
Nevada Commission on Tourism (2/14/85)
Nevada Parent Teacher Association (4/27/85)
City of Lovelock (1/15/86)
Nevada League of Cities (8/16/86)

In addition, the Western Shoshone National Council has stated that the "proposed high level nuclear waste dump shall not be tolerated on Western Shoshone land." The Shoshone claim about one-fifth of the state, based on the Treaty of Ruby Valley which guaranteed the Shoshone perpetual ownership of their traditional homelands.

Nevadans have a unique relationship with the Department of Energy. Decades ago we heard much of the same arguments about above-ground testing we are hearing today about nuclear waste disposal. "Trust us." Past assertions about nuclear activity in Nevada have been belied by records of test site workers, servicemen and unwitting downwind civilians showing terrific cancer rates and early deaths.

Nevadans have worked for years trying to change the false image of Nevada as a desert wasteland to the reality of a state with great natural beauty and recreational resources. Our economy is proving to be as fragile as our desert ecology. Because DOE seeks to isolate the wastes from densely populated areas, we are lead to conclude an accident is likely. Even if no radiation were released during such an accident, public suspicions about contamination could hinder tourists and industry from coming to Nevada. How will the state be compensated for these losses?

An alarming trend is developing in the wake of new and hazardous nuclear waste and military projects, such as supersonic aircombat training. Sparslely populated areas in the west are becoming high risk dumps, where greater risks to people are allowed because fewer people will be exposed. Not only does this endanger the lives of rural people, it raises serious questions about equal protection under the law.

Citizen Alert believes the waste solution should be so safe that the utilities and users of nuclear power could live safely and comfortably around the disposal site.

Nevadans were elated last fall when Congress stepped in and deleted DOE funding for site specific activities. The cut symbolized widespread dissatisfaction over the manner in which DOE has implemented the law, and represented a significant victory for all concerned about the nuclear waste program. Had Congress allowed DOE to begin in-depth characterization, the noose around our neck would have been painfully tightened, with millions of dollars being waste on investigating a technically worthless site.

Indeed, had Congress not acted, the drill rigs would be cranking away at Yucca Mountain right now.

Evidence continues to mount on the technical flaws of all sites currently under investigation. Combine this with the pre-eminent role politics has played in the program, and it is clear that the result of the present process will be an unsafe repository. The consequences of this could be catastrophic.

The importance of working together to address the nuclear waste disposal question can not be overemphasized. That is why Citizen Alert supports the four-point plan advocated by the National Nuclear Waste Task Force. The Plan calls for a termination of site-specific work in first and second-round states and in Tennessee and for the establishment of an independent review panel to review DOE's performance and make recommendations for improvement. The Plan also supports increased funding to develop safe nuclear waste storage at the reactor sites where the waste is produced.

This approach can likely be supported by all states affected by DOE's nuclear waste programs. And it also carries with it the possibility that public confidence in nuclear waste dispoal can be be attained, with the emergence of the perception that Congress is now restoring technical considerations of safety as the overriding concern. Unless Congress steps in and acts, the program DOE is running, like a rabid dog, will continue on its dangerous and unacceptable rampage. In short, it's time to put this rabid dog to sleep before further damage is done.

Thank you for this opportunity to speak.

CANT
Citizens Against Nuclear Trash
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With the deepest honor and gratitude, Citizens Against Nuclear Trash (CANT) offers for your consideration these, our thoughts on the current debate in Congress dealing with the future direction of the high level radioactive waste storage/disposal program. The Department of Energy (DOE), with seeming deliberate intent, has so thoroughly misused the 1982 Nuclear Waste Policy Act, that it appears certain that new direction is desirable in the Radioactive Waste Program.

DON'T TREAD ON ME

As consensus grows for a moratorium on DOE's geologic repository program, more and more Senators and Representatives are turning thoughts to the related question "What then do we do with the spent fuel and defense waste accumulating at the nation's commercial nuclear power reactors and defense facilities?"

Suggestions currently being offered include (but are not limited to) proceeding with DOE's plans for a a single Monitored Retrievable Storage (MRS) facility in Tennessee, developing a number of regional MRS facilities around the country, and storing the waste at currently operating facilities.

CANT believes that the most promising and acceptable solution to this difficult problem will be that which most closely adhers to the following principles. Such a solution will:

1. Provide to the maximum extent possible for the health and safety of all Americans, those alive today as well as those yet to be born.
2. Minimize the transportation of HLW.
3. Address the basic issue of "fairness" in the siting of stored waste.
4. Address the political realities of the situation in regional terms (East versus West), and in economic terms (those who benefit from the generation of the waste versus those who do not).
5. Be cost effective.
6. Fulfill the responsibilities accepted by the Federal Government in past legislation.

With your indulgence, a brief discussion of each point follows:

(1.) All would agree that the health and safety of American Citizens is the paramount concern of any waste disposal or storage program. Industry worker exposure should be of as much concern as public exposure.

Evidence is already at hand that there is no level of radioactivity so low that no physiological effects (ie. cellular damage) cannot be detected. With this in mind, emmissions from all radioactive waste must be minimized. Rad waste which escapes from human control by any means, whether by accident or planned release, is available to directly endanger human health or to be incorporated into the food chain. Unfortunately, because of technical and economic limitations, whenever rad waste is handled there are planned releases. This is a fact of life. All too often there are accidents - sometimes small, sometimes large. This also is a fact of life.

The handling of HLW also generates Low Level Waste (LLW) which in turn must be disposed of. We are aware of no claims that there is any storage or disposal facility of HLW or LLW which will not in time release the waste and endanger human lives. In fact, according to figures from DOE/RW-0006 Rev. 2, Integrated Data Base for 1986: Spent Fuel and Radioactive Waste Inventories, Projections, and Characteristics, fully 25% by volume of all the radioactive waste in the United States is currently subject to remedial action. In other words the waste was improperly disposed of the first time, is currently endangering our environment or our health, and must be redisposed of, at great expense. This figure of 25% says little about what danger is posed to the public, but speaks volumes about our Country's rad waste disposal track record. It should be noted that the 25% does not include the Fernald, Ohio Uranium Feed Plant, or the major cleanups contemplated at Hanford or Savannah River Plant. (Supplement A)

It does not appear that a history of competent rad waste disposal exists in America. It is certain that we cannot afford to continue "business as usual." It is also certain that DOE's HLW efforts have engendered almost universal apprehension and mistrust.

At present, spent nuclear fuel is stored predominately in spent fuel pools at reactor sites throughout the nation. These pools require constant monitoring, power supplies, and protection from terrorists. They are complex installations of pumps, pipes, valves, boron "poisons", and emergency and water cleansing mechanisms. As they were designed and constructed to be only an interim storage mode, it would be inappropriate to rely on them for any longer than is necessary. Several are already approaching the end of their design life. Indeed, the majority of the pressure directed at DOE to continue the repository program is directed from the nuclear power industry and their rapidly filling pools. (Supplement B)

Fortunately, another technically developed solution is at hand - dry cask storage. These casks are inherently safer than the spent fuel pools; they require no power; they are not as susceptable to earthquake damage or terrorists; some have double seals and monitor leaks in either seal. One, the CASTOR cask, can even qualify as a transportation cask, thus eliminating one step in the handling of the waste (the CASTOR could conceivably even qualify as a disposal canister).

The NRC has already licensed Dry Cask Storage pilot projects in Virginia at the Surry Nuclear Power Station (CASTOR casks for a period of 20 years) (Enclosure C), the H.B. Robinson Nuclear Power Station in South Carolina (concrete module) (Enclosure D), and the TVA. In addition , the DOE is further developing the technology at their facility in Idaho. European dry cask experience is already substantial.

(2.) When waste is being transported, it becomes vulnerable to a variety of hazards - weather, accidents, terrorists. There is even serious doubt whether existing casks have been adequately tested. (Enclosure E.)

There is also the question of why to move the waste. To get it to a safer place? If there is doubt concerning the safety of the sites of nuclear power plants, ever graver questions are raised.

In any event, removing spent fuel from the pools and placing it on on-site dry cask storage is a major improvement in safety and containment over spent fuel pool storage.

(3.-4.) The question of the "fairness" of the locations of rad waste storage sites strikes close to the heart of much of the criticism to the geologic repository and MRS siting opposition. The seeds of this criticism can even be seen in the political compromise which is the NWPA.

On-site Dry Cask storage keeps commercial spent fuel predominately in the region where the citizens benefit from the electric power creating the waste. These citizens already have a "waste dump" in their regions - they have the spent fuel pools. Placing the waste in dry casks only makes their "waste dumps" safer.

Likewise, defense HLW solidified and encapsulated in dry casks greatly enhances the safety of those working or living near DOE defense facilities, especially in the long term.

Fierce opposition has surfaced to the siting of an MRS facility in Tennessee. Indeed, until a history of integrity, technical excellence, and true public and state participation is established in the siting of rad waste facilities, it seems certain there will be such fierce opposition.

In the present climate for siting waste dumps, the suggestion to establish several regional MRS facilities around the country appears doomed. When we can't site even one with integrity and cooperation, how can we site several? Indeed, the actual need for regional MRS facilities has not yet been demonstrated.

(5.) On-site Dry Cask storage eliminates immediately all transportation costs to an MRS; costs which can rival the purchase price of the dry cask themselves. The CASTOR cask, for instance, costs in the neighborhood of $700,000 each. When the waste is ultimately shipped, the dry storage cask can eliminate or reduce the cost of renting shipping casks. (Enclosure F)

Dry storage casks can cost up to five times less than additional spent fuel pool storage. (Enclosure G)

An additional long range cost benefit would result from the storage of the waste for a substantial period of time before shipment to a final disposal facility. The longer the waste is aged, the easier and safer it will be to transport and dispose of it.

Safety and public confidence will be enhanced when time limits no longer drive the waste disposal program. Only integrity, technical excellence and public participation should drive such a program.

(6.) The NWPA requires the Federal Government to accept title to the nation's commercial spent fuel in 1998. Since it would require decades to physically move the spent fuel into a repository, the Act did not require DOE to immediately remove the spent fuel from the premises of the nuclear power plants. DOE must only accept title to the waste. In the NWPA, Sec. 135 (a)(1)(C) relating to the Federal Interim Storage Program, DOE is authorized to provide for the "construction of storage capacity at any site of a civilian nuclear power reactor." In Sec. 135 (a)(1)(B), dry storage casks are specifically permitted. Sec. 135 (a)(3) provides for the Secretary to "consider the timeliness of the availability of each such method (of storage) and shall seek to minimize transportation of spent nuclear fuel, the public health and safety impacts, and the costs of providing such storage capacity."

All this is eminently compatible with on-site dry cask storage.

In conclusion, CANT respectfully requests that you give due consideration to the option of dry cask on-site storage of HLW for 40 to 50 years. It's safe, available, cost effective, politically "fair," and well within the scope of Federal responsibility.

Senator Hecht has introduced S. 1141, which would require spent fuel to be aged for a period of 50 years before it could be transported to a repository.

With only three minor reservations, CANT supports this legislation. (Supplement H)

1. We see no need or benefit in allowing for any future reprocessing of commercial spent fuel in this legislation. (P. 2, line 4) Reprocessing only separates radioactive isotopes. It does not reduce or destroy those isotopes, their radioactivity, or their danger.

2. We see no need to contemplate the siting of another nuclear facility, ie. the MRS. (P. 2, line 24)

3. Language should be added to the legislation which clearly expresses the intent of Congress that the transportation of spent fuel and defense HLW should be kept to an absolute minimum.

HIGH-LEVEL NUCLEAR WASTE ISSUES

Transportation of Radioactive Materials

WEDNESDAY, JUNE 3, 1987

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON NUCLEAR REGULATION,
Washington, DC.

The subcommittee met, pursuant to recess, at 10:52 a.m., in room 406, Dirksen Senate Office Building, Hon. John Breaux (chairman of the subcommittee) presiding.

Present: Senators Breaux, Simpson, Stafford, Symms, and Reid.

OPENING STATEMENT OF HON. JOHN B. BREAUX, U.S. SENATOR FROM THE STATE OF LOUISIANA

Senator BREAUX. The subcommittee will please come to order.

This morning the Subcommittee on Nuclear Regulation meets to conduct the third of four scheduled hearings regarding certain aspects of the Federal Government's efforts to implement the Nuclear Waste Policy Act of 1982. In our previous two hearings we have received testimony from the Secretary of Energy, John Herrington, on the overall policy direction we would like to see the program's implementation follow, and detailed testimony from a number of witnesses concerning the DOE's efforts to site and construct a permanent geologic waste repository.

While our hearing today is not based on any explicit legislative direction contained in the Nuclear Waste Policy Act, it should be obvious to the casual observer of the program that one result of this Nation's effort to centralize and make permanent our waste disposal management will be an increase in the concentration of shipments of radioactive waste. Under existing law, the Department of Transportation has the primary regulatory authority for shipments of radioactive material; thus, DOT has promulgated regulations pursuant to the Hazardous Materials Transportation Act governing the types of vehicles and qualifications for the drivers that transport such material.

In addition, pursuant to a Memorandum of Understanding between DOT and the Nuclear Regulatory Commission, the NRC is charged with evaluating and certifying the design, manufacture, operation and maintenance of spent fuel casks. NRC approval is routes is required for shipments needing physical protection during transport to prevent theft or sabotage, but the routes chosen must be compatible with DOT regulations.

Finally, for shipments of radioactive material involving DOE activities, that agency has the authority under DOT regulations to approve the packaging and certain operational aspects of such shipments, although DOE is required to use standards and procedures equivalent to those developed by the NRC.

Perhaps one of the toughest issues that must be addressed during the consideration of this topic is related to section 112 of the HMTA, the Hazardous Materials Transportation Act. Pursuant to subsection 112(a) of that act, those State and local requirements that are inconsistent with the HMTA requirements or regulations issued pursuant to such requirements are effectively preempted. However, the subsection provides that an otherwise inconsistent State or local requirement may not be preempted if DOT determines that such requirement affords an equal or a greater level of protection to the public and does not unreasonably burden commerce.

It should be noted that the HMTA is scheduled for reauthorization by Congress this year. While the jurisdiction for that effort lies with other committees, these issues will undoubtedly be debated at some length. Given the important link that transportation of high-level nuclear waste plays in decisions related to the waste disposal program, I would urge our committee's attention to the witness' testimony this morning.

Senator Simpson, do you have anything?

OPENING STATEMENT OF HON. ALAN K. SIMPSON, U.S. SENATOR FROM THE STATE OF WYOMING

Senator Simpson. Mr. Chairman, I thank you very much. Just very briefly, I appreciate your scheduling of this hearing this morning. You are keeping a vigorous agenda, and I admire that. We have a good group of witnesses; I look forward to hearing their testimony.

This issue of transporting nuclear waste is a real sleeper, in my mind, in this waste program. We're going to soon discover that this issue more than any other will have an affect on more people in more communities than any other question in the entire nuclear waste disposal area because it's one that involves the transportation of these materials right through the back yard of a lot of communities, and that's an issue that really hits home, and they ain't going to like it at all.

It's a puzzling and vexing issue because it works, and what we're doing now has worked and has a remarkable safety record.

Thank you, Mr. Chairman.

Senator Breaux. Senator Reid?

ONPENING STATEMENT OF HON. HARRY REID, U.S. SENATOR FROM THE STATE OF NEVADA

Senator Reid. Thank you very much, Mr. Chairman. I am sorry I am not going to be able to stay during the morning part of the hearing. I have been requested by the Majority Leader to preside at 11 o'clock, but I return. I am sure the hearings will go into this afternoon.

It's a pleasure to participate in these hearings. I am sure that we're going to learn a great deal from the various panels presenting testimony about this critical and encompassing issue, as has been indicated by Senator Simpson.

I think we're going to learn something that is not going to be repetitious. Some of the things that we have heard relating to nuclear waste storage have become somewhat repetitious, but this will not be.

In reviewing material about current laws and regulations pertaining to the transportation of radioactive materials, I came to one conclusion very quickly. This is a complex safety issue requiring improved coordination between various Federal agencies and State and local governments. Officials from Clark County and Las Vegas, Nevada are here today to testify. I welcome them here. They're going to outline their fears about the transportation of high-level nuclear waste through this rapidly-growing metropolitan area of the greater Las Vegas area. The testimony sets forth very valid concerns about the risks associated with the shipment of Department of Energy-generated waste from the Nevada Test Site to the waste isolation plant in New Mexico, scheduled to begin next year. Because the Department of Energy has chosen Yucca Mountain, located less than 100 miles from downtown Las Vegas, as a potential site to hose the Nation's first repository for high-level nuclear waste, the questions surrounding DOE's plans for moving waste to storage and disposal facilities warrant our serious attention.

Although the Department of Transportation has primary responsibility for shipments of radioactive materials, the Nuclear Regulatory Commission and the Department of Energy have specific responsibilities as well. In addition, the regulatory duties of the Department of Transportation, the NRC and DOE are performed in conjunction with State and local governments. Of all hazardous materials transported annually, approximately 1.5 billion tons—that's the amount that's transported each year, 1.5 billion tons—only about 3 percent of the total is classified as nuclear. But 3 percent of 1.5 billion is a lot of tons. And less than 1 percent of that 3 percent is spent fuel, or nuclear waste. But shipments of this waste will increase significantly once the nuclear waste disposal program becomes operational.

Classes of over 30,000 hazardous substances are determined to be capable of posing an unreasonable risk to human safety, property and the environment. The Department of Transportation reports about 6,000 incidents per year involving the release of hazardous materials. However, the Office of Technology Assessment believes that more than half of all incidents go unrecorded because of poorly coordinated recordkeeping at the Federal level.

Uncoordinated regulation of transportation and a lack of training about how to respond to accidents have been cited as problem areas which need correction. Legislation has been introduced affecting nuclear materials transportation. The senior Senator from Nevada, Chic Hecht, has introduced a bill which would prevent the Department of Energy from shipping any high-level radioactive waste through an urbanized area, as determined by the Census Bureau, if affected local government can identify a safer route.

Senator Hecht will testify in more detail in a few minutes about this. I am happy to state that I am a cosponsor of S. 833.

Senator Proxmire also has introduced legislation requiring approval by the NRC of shipments of high-level waste. The NRC would examine proposed routes, evaluate emergency preparedness, and determine whether shipment was, in fact, necessary. Under the proposal, States and Indian tribes would be allowed to require advance notice of shipments, impose fees, set inspection and accident reporting requirements, and establish other regulations.

Senator Tim Wirth from Colorado has a proposal which amends the Hazardous Materials Transportation Act, adding new training, registration and routing requirements, and requiring DOT to analyze the safety of potential nuclear waste transportation routes.

These are all proposals worthy of our consideration.

With respect to the transportation of hazardous materials, Senator Wirth noted that "So far, we have been lucky. A mobile Bhopal has not occurred."

It is time to make some necessary adjustments to ensure the health and safety of the public so that the possibility of another Bhopal is minimal, at the very least.

Thank you very much, Mr. Chairman.

Senator Breaux. Thank you very much. The Senator has to preside, and we'll certainly excuse him and hope to see him later on.

Senator Hecht, we'd like to welcome you and Congressman Rowland. Senator Hecht, do you want to go first?

STATEMENT OF HON. CHIC HECHT, U.S. SENATOR FROM THE STATE OF NEVADA

Senator Hecht. Thank you, Mr. Chairman. First of all, I'd like to thank my colleague from Nevada for his remarks, and I appreciate his cosponsorship.

Mr. Chairman, I appreciate the opportunity to appear before the subcommittee today to share my views regarding the transportation of high-level radioactive waste and spent nuclear fuel. I would like to commend the subcommittee for holding this hearing, because transportation is one aspect of the broader nuclear waste issue that has people concerned all across the country.

In the interests of time I will summarize my statement and insert the rest for the record. I am sure that will meet with no objection.

Senator Breaux. Without objection.

Senator Hecht. Mr. Chairman, as the subcommittee considers the nuclear waste transportation problem, I encourage you to consider the need for legislation to address important aspects of the transportation issue. I am pleased to inform the subcommittee that, along with Senator Proxmire and other interested Senators, I have already developed comprehensive legislation that will be introduced in the very near future that addresses this issue and focuses on three points.

First, we need to give our local governments a greater role in the choice of transportation routes and better advance notification of waste shipments.

I also believe we must take stronger steps to avoid exposing our population centers to the risk of nuclear waste transportation. In this context I have introduced S. 833, which is within this committee's jurisdiction, that addresses the problem of transporting nuclear waste through urban areas.

Second, we must examine the safety of the packages used to transport high-level nuclear waste and make it clear that these materials are only to be transported in packages approved by the Nuclear Regulatory Commission.

Third, I would recommend that the committee look for ways to reduce the number of waste shipments that are made by the Federal Government. Waste can be consolidated before it is transported, or stored for a sufficient period, allowing it to cool down to a point where more waste could be safely transported in a package of a given size.

To achieve this, I want to point out to the committee that I have also introduced legislation, S. 1141, which would require waste to be stored for 50 years before being transported to a repository. Such a requirement would be a positive step since waste material would be cooler, less radioactive, and therefore less dangerous.

Mr. Chairman, what we are discussing today is a very critical issue for America. I commend the committee for addressing the problem and stand ready to work with you. Thank you for your consideration.

Senator **Breaux**. Thank you very much, Senator, for your involvement.

Does your legislation create a new administration or a new way of approaching the problem?

Senator **Hecht**. No. I have never been in favor of creating new administrations. I am a conservative Republican, as you well know. What we want to do is bring the local governments more into the loop, so to speak.

Now, in the Energy Committee, of which I am a member, I remember two years ago, Senator Ford said, "When these waste shipments come through our State, who is going to pay? Who is going to look? We are going to have a police chief, a sheriff—who is going to guide these shipments through?"

So these are some of the problems we want to address, and I think this is a problem all around America.

Also in that context, Senator Evans of Washington has just introduced some legislation which I cosponsored with him to have four MRS facilities around America, which would certainly alleviate many of the problems of transportation.

Now, in New Mexico, the WIPP project—I remember about two years ago, before you were in the Senate, Senator Domenici requested—and I don't have that figure right in my mind—something like $280 million to upgrade the roads to this WIPP project. It was a local issue. The local people said, we have to have better roads to accommodate these shipments, and Congress agreed to that and we appropriated the money.

Senator Simpson, what was that total? It was something in that area, wasn't it?

Senator **Simpson**. I do not recall.

Senator **Hecht**. Okay. Something like that.

So we're talking, probably, a huge amount of money unless we take certain steps on the transportation of nuclear waste.

Senator **Breaux**. Thank you.

Alan, any questions?

Senator **Simpson**. No, I have no questions.

Senator **Breaux**. Chic, we appreciate your being with us. I understand your bill has been referred to our committee, and we're going to certainly give it every consideration we can. It's a good step.

Senator **Hecht**. Thank you. As I said before, my complete statement will be in the record.

Senator **Breaux**. Without objection.

Senator **Simpson**. It's $58 million, and they haven't spent it all.

Senator **Hecht**. How much?

Senator **Simpson**. It's $58 million.

Senator **Hecht**. I was under the impression it was more than that. Thank you very much.

Thank you, Senator.

Senator **Breaux**. Congressman Rowland, we are pleased to have you here.

STATEMENT OF HON. JOHN G. ROWLAND, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CONNECTICUT

Mr. **Rowland**. Thank you very much, Mr. Chairman and members of the subcommittee. You have my written statement; I will try to summarize as briefly as I can.

First I'd like to thank you for permitting me to testify today on the subject of the transportation of nuclear waste. Clearly, this hearing is very timely in view of the fact that the Federal law governing this issue, the Hazardous Materials Transportation Act of 1975, is due to be reauthorized this year by Congress. As such, I would like to commend you for holding this hearing.

As the reauthorization process moves forward I would submit that the time has come for both the House and the Senate to come to terms with one simple fact. The fact is that the current statute governing the routing of hazardous materials over our Nation's rail and highway system does not work. The law sets forth, on one hand, the need for national uniform routing standards; yet on the other hand, any town or city can try to veto such standards merely by invoking the nonpreemption determination clause. We have seen this happen with regard to New York City in particular.

In my opinion, Congress needs to fish or cut bait. Either we provide for uniform national routing standards under the Hazardous Materials Transportation Act or we don't. If the latter is going to be the case, then all we are doing is tantamount to continuing the status quo, the effect of which is to allow localities to utilize the statute and erect barriers to permitting hazardous materials to be transported through their borders.

A classic example of the need for national uniform standards is borne out by the ongoing battle between the State of Connecticut and the City of New York over the routing of spent nuclear fuel emanating from the Brookhaven National Laboratory on Long Island. As you very well know, New York City has invoked the nonpreemption determination procedure to avoid having this nuclear waste traverse the metropolitan area. Alternatively, they propose to load this fuel on barges, send it across Long Island Sound to Connecticut, and then truck it on a circuitous route through Connecticut to the New York State border across Route 84.

This controversy has preoccupied a significant amount of my time since I entered the Congress in 1985. By way of background, my district would be the most impacted were New York City to win its bid.

In looking at the need for reform to the routing statute in the Hazardous Materials Transportation Act, I believe it should be noted that New York City's fight with the Federal DOT over this matter is now 11 years old, and yet there is no end in sight to this controversy.

Quite frankly, in my opinion New York City has dragged this matter out solely because of bald-faced politics. For sure, I'm not crazy about the fact that other nuclear waste is being transported through Connecticut, but nonetheless, this is a fact of life. For New York City to try and shove off to my State the responsibility for routing nuclear waste which is produced at Brookhaven, however, is outright arrogance. Yet despite New York City's pitiful case in this matter, the law allows them to drag the matter out.

There is another major problem with New York City's case, and that is that their own paid consultants don't support it, yet New York City persists in their attempts to evade responsibility in this particular matter. Let's look at the track record.

They've lost in the Court of Appeals. They've lost in the Supreme Court. They've lost every administrative action which has been decided to date, and now they're back in court suing DOT, rehashing the same old arguments.

I am confident that history will repeat itself and that they will lose once again in the current filing before the United States District Court for the Southern District of New York. The problem is, the process could go on forever, with New York City filing a litany of appeals.

Although I am somewhat sympathetic to circumstances which might be unique to localities, and thus warrant the granting of nonpreemption determinations, I'm afraid that the law as it currently stands affords too much opportunity for abuse of the process. New York City clearly shows this to be the case. As such, it would be my recommendation that some type of finality be established to the routing process. To this end I am giving serious consideration to introducing legislation which would have the practical effect of eliminating outright the ability of localities to attempt to invoke nonpreemption determinations. I regret that this is necessary; however, I simply do not see any alternative. I must tell you that if New York City wins this case, I am prepared to suggest to my cities and towns throughout the Fifth Congressional District that they file similar applications. After all, the Connecticut route would involve Interstate 84, which runs directly through Waterbury and Danbury; and since there is no alternative beltway, the case they put forward could have the same validity as New York's.

What is at stake here is the integrity of the HMTA, pure and simple. It is my opinion that if New York City wins this case, the HMTA is effectively gutted. Our Nation's ability to efficiently and effectively move hazardous materials to their final storage sites would be seriously impaired.

Consequently, it would be my recommendation that serious consideration be given to revising the Hazardous Materials Transportation Act along the lines of what I have detailed.

In closing, I do appreciate the opportunity to testify before you today. I would be happy to answer any questions you might have.

Senator **Breaux**. Congressman, where is the waste that New York City has refused heading for?

Mr. **Rowland**. It's going out to, I believe, Idaho. It's quite a ways out. They're claiming that they don't want it to go through New York City, therefore the shorter route would be to ship it by barge across the Long Island Sound to one or two points in Connecticut, then literally go all the way across the State of Connecticut. And as you know, in the decision by DOT, they want to find the safest and most economical manner, and in all the determinations they have made this would not be safer nor would it be shorter, nor would it be less costly.

Senator **Breaux**. Does Connecticut have a State law that would restrict it being taken through the State in the manner in which they're trying to do it?

Mr. **Rowland**. Well, Connecticut would not specifically have a law not allowing that. We, at some point, could file for a nonpreemption determination, however, if DOT or the courts decide that it can go through Connecticut. The point I was making in my testimony was that the process continues and never seems to end.

Senator **Breaux**. Let me ask you this. Our material says:

> To provide a forum for resolving interjurisdictional conflicts under the Hazardous Materials Transportation Act, the Department of Transportation established procedures in 1976 allowing States, localities, and affected parties, and DOT itself, to initiate an administrative ruling process to determine whether State or local requirements are inconsistent. The administrative process is advisory only and does not preclude judicial review of a State or local requirement. Independent of the DOT procedures, a Federal court may be asked to decide whether a State or local requirement is inconsistent, and therefore preempted, under the HMTA or is invalid under the Commerce Clause of the United States.

Is that procedure not working in this case? Is that why you're recommending we need to change the law?

Mr. **Rowland**. I don't think it is working. The problem that occurs right now is that this has dragged out for 11 years. They've lost every battle; they've lost every administrative decision; they've lost every court case. They can continue to file appeals and go through a litany of procedures, but——

Senator **Breaux**. But wouldn't we eventually get to a final conclusion under the existing procedures?

Mr. **Rowland**. In my opinion, I don't see a final conclusion. I think they can keep appealing.

Senator **Breaux**. You're recommending some type of procedure that would get to a conclusion quicker?

Mr. **Rowland**. Indeed, eliminating the nonpreemption determination would be rather drastic, but I think we need to put some finality to the process. Some due process, of course, but it needs to end somewhere.

The real scary aspect, quite frankly, Mr. Chairman, is if indeed the court decides that they can go through Connecticut, then the ball starts rolling again. Each and every city and town could then file for nonpreemption determination and, again, it can go on for year after year after year.

I think we have to swallow hard and make some tough decisions here in Congress and allow DOT to do their job.

Senator **Breaux**. Senator Simpson?

Senator **Simpson**. Congressman Rowland, I know you as a very able newer Member of Congress. I read your letter. It's a very powerful statement; that's the way I used to sound when I came here.

Mr. **Rowland**. Senator, I hope I follow in your footsteps.

Senator **Simpson**. I had hair and weighed 290 in those days.

I mean to tell you, I think the creativity of litigants is extraordinary wherever we go from here. It's there now; it's going to remain there; it's going to be appalling in this area. And again, as John and I were saying yesterday, think of a wandering barge just hauling garbage, that's become either tragic or laughable, but all humor is serious and all tragedy is funny anyway.

But anyway, this is a very disturbing thing. Are you really of the belief that we should have less veto power at all levels in the United States?

Mr. **Rowland**. Well, I think if you look at the circumstances, I think all of us agree that there should be some due process. All of us agree that there are going to be some cities and towns and localities and counties that have legitimate concerns. My argument here is that New York really doesn't have a legitimate concern. They don't have a legitimate claim to transport the material through Connecticut, so therefore they can play games and use the system for 11 years and possibly many, many more.

So I would advocate cutting the process back; some finality, some legitimate appeal process, perhaps even having a threshold that must be met before a county or city or town can file for nonpreemption determination to begin with. That may be one of the best processes.

Senator **Simpson**. Okay. So that if New York prevailed here, you really see the other communities in your district going to do the same thing?

Mr. **Rowland**. Absolutely. I would recommend that tomorrow morning, and we can go through the same process. In the meantime, Brookhaven is sitting there waiting to get rid of their waste. They've had instances where they went for a number of years and literally were at a maximum capacity and then had to ship it out through New York because they didn't have jurisdiction to go through Connecticut.

Senator **Simpson**. That's an interesting and vital issue that confronts us because there are 107 reactors on stream. The issue of transportation may get more dramatic, but it is a curious thing that it is probably the one thing where nothing has happened yet. That's what we want to remember, and that's what this subcommittee has to address its attention to as we try to hear what's going on. We want to remember that there haven't been any Three Mile Islands in transportation. Some have tipped over; some have done a lot of things, but nothing has happened in the way of escape. And the Type A containers and the Type B containers and the ones that are dropped from 32,000 feet and the ones that run with trains into walls—nothing has happened yet. Maybe the testing procedure needs to be more known. Maybe people need to see those experiments to feel more comfortable. But those are the things that we will deal with, and I really appreciate your comments.

Mr. ROWLAND. Senator, if I may add, you are absolutely correct. I think there is a certain amount of misinformation about the impact of this waste spilling, and there indeed have been no accidents. I've spent a great deal of time in the last three years studying the issue and understanding the impact. It's hard for you and me to convince our constituents of that. But more important than that is the precedent that is set. Indeed, if DOT were to give this nonpreemption determination to New York, what is to stop New Jersey, Delaware, Pennsylvania, Massachusetts, other States to go forward with the same arguments, the same filings, and want to transport through Connecticut? So I'm concerned about the precedent being set, with a full understanding of the nature of the danger.

Senator BREAUX. We thank you very much. Your knowledge of the issue is very, very astute and we appreciate your recommendations.

Senator Stafford, any questions?

Senator STAFFORD. Thank you, Mr. Chairman. I have no questions of this witness.

I got here in time to read your statement, I am sorry to say, Mr. Rowland, but not to hear what you said in your opening remarks. I did note you suggested you might like to emulate Senator Simpson, and I think that's a very laudable ambition. But before you carry it out completely, you'll want to talk to some of us who know him quite well.

Mr. ROWLAND. Thank you for that advice and guidance.

Senator BREAUX. Thank you very much, John. We appreciate it.

One of the points we were making is the question of the public's acceptance of the process and how important that is, and that's very, very true. I remember Senator Simpson visiting the high-level waste disposal in Germany years ago, where they brought the waste to the facility in large trucks through a very small village, and I asked the people who were taking me around whether the people accepted transporting the waste through this small village in these very small trucks, and the guide told me, "Oh, yeah, they have no problem with it. They don't know what's in the trucks."

That's a problem that we in the United States, have a different perspective of. People know what's in the trucks and that's why they have to be confident that the process works.

We'd like to welcome our first panel of witnesses: Ms. Edith Page, Project Director, Transportation of Hazardous Materials Project, with the Office of Technology Assessment; Mr. Alan Roberts, Director of the Office of Hazardous Materials Transportation, Department of Transportation; Mr. Hugh Thompson, Director of the Office of Nuclear Materials Safety and Safeguards for the NRC, and Mr. Lake Barrett, Director of Transportation and Waste Systems, Office of Civilian Radioactive Waste Management in DOE.

Ladies and gentlemen, we appreciate your being here. Thank you for being so patient. Ms. Page, we have you listed first; if you would like to proceed, we'd be pleased to have your testimony.

STATEMENT OF EDITH B. PAGE, PROJECT DIRECTOR, TRANSPORTATION OF HAZARDOUS MATERIALS PROJECT, OFFICE OF TECHNOLOGY ASSESSMENT

Ms. PAGE. Thank you, Mr. Chairman. It's a pleasure to report to this subcommittee on the results of OTA's study of the transportation of hazardous materials. I've submitted a longer statement for the record, and with your permission, I'll summarize it.

Senator BREAUX. Please.

Ms. PAGE. Radioactive materials comprise only a small fraction of the shipments of hazardous materials made annually in the United States. These materials are shipped by rail, truck and air to facilities throughout the country. The major highway routes are shown in figure 1 in the written testimony. I've brought a map of the country with the interstate system in blue. As you can see, the interstate system—which is the dark one—affects every State in the country. Transportation routes are formed to bring goods to the major urban centers of our country; that's what they're for, to take things where the people are. And unfortunately, when we're carrying such items as hazardous materials and radioactive materials, that takes them where the people are as well.

The Department of Transportation, as you've noted, has primary Federal responsibility for transportation of radioactive materials. The Nuclear Regulatory Commission certifies the packaging and some transportation operations for shipments of highly radioactive materials, and the Department of Energy has separate authority to approve packaging for its shipments and certain Defense-related transportation.

However, regulatory distinctions between Federal agencies are meaningless to State and local officials. Their primary concern is ensuring the safety of their citizens. As the public sees it, DOD and DOE shipments travel under different regulations from the more familiar NRC requirements, and even the NRC regulations do not adequately address some State concerns, such as publicly-conducted risk analysis for alternate routes.

The apparent lack of Federal sensitivity to State and local issues is a major source of frustration and occasionally outraged indignation on the part of the public. Indeed, the bills before this subcommittee today represent efforts to address some of these issues.

Unlike packaging for other hazardous materials, the containers for the most dangerous radioactive materials are constructed so as to prevent releases even in severe transportation accidents. OTA concluded that the standards set by NRC for these packages produce exceptionally durable containers. If the standards are meticulously followed during cask manufacture and transportation, the containers provide a much greater degree of public protection than that afforded in any other hazardous materials shipping activity.

OTA also concluded that the programs most needing improvement for safe transportation include quality assurance and quality control in cask manufacture and maintenance; operator, handler, and driver training, and inspection. All of these have both technical and behavioral components. The technical aspects are governed by Federal standards and regulations, but the behavioral components are far less amenable to such controls. Over half of all vehicle accidents and hazardous materials spills are caused by human error. As an example, State inspectors have found high violation rates of Federal hazardous materials regulations generally. Even vehicles carrying radioactive materials are not always in compliance with the regulations. A five-year Washington State study completed in 1984 showed that over 25 percent of the trucks entering the State carrying radioactive materials were issued arrest or warning tickets for violations. This speaks to the need for continued Federal support for development of State inspection and enforcement capabilities, and for better training for operators and handlers.

Most of the nuclear fuel cycle and waste shipments move by truck or by rail, bringing them into the major urban centers of the country. To protect their citizens many States have passed additional regulations to control risks that they feel threaten them despite Federal safeguards. However, OTA found that individual State registration programs, permit requirements and routing restrictions create a regulatory patchwork that complicates enforcement and is burdensome to industry.

If Congress decides that States may impose separate regulations for fees, notification and driver requirements, as S. 1008 provides, language requiring consultation and agreement with neighboring corridor States on routes, and any other items that will affect those States is of the utmost importance. Fifty sets of differing regulations would create grave difficulties for efficient and safe transportation.

OTA found also that improved Federal information and assistance is needed for States considering routing or other transportation regulations. Risk or environmental impact assessments of alternative transportation routes for repository, MRS and corridor States, such as those called for in the bills being considered today, could be of great assistance. Federal facilities, such as the Oak Ridge National Laboratory, have rich resources in computer mapping and risk analysis programs that States could use.

Nevada and Washington, as you heard today from the Senators from Nevada, as potential repository sites are working with nearby corridor States to establish a basis for making mutually-acceptable routing and emergency response decisions. Their efforts represent an exemplary approach that DOE, NRC and DOT would do well to support, encourage and emulate. State, local and Indian tribe officials must be treated as equal partners with the Federal Government if a workable transportation system is to emerge because unilateral decisions by any single entity have an impact on all other entities. In other words, they're spreading the risk around.

Working cooperatively rather than as adversaries, these groups can ease transportation decision-making. OTA is pleased to have participated in identifying for Congress some of the major concerns related to this important transportation.

This concludes my prepared statement, and I will be happy to answer questions when the time comes.

Senator **Breaux**. Thank you, Ms. Page.

We will next hear from Mr. Alan Roberts, and I would ask that all of our witnesses try and summarize their testimony so that we could get into the questions.

Mr. Roberts?

STATEMENT OF ALAN ROBERTS, DIRECTOR, OFFICE OF HAZARDOUS MATERIALS TRANSPORTATION, DEPARTMENT OF TRANSPORTATION

Mr. **Roberts**. Good morning. I am pleased to be here to discuss the Department's role in carrying out our responsibilities for the safe transportation of radioactive materials.

The Hazardous Materials Transportation Act provides the primary legislative authority for assuring the safe transportation of hazardous materials by all modes. That Act requires the Secretary of Transportation to establish a regulatory program to carry out the purpose of the Act. Responsibility for implementation of the act has been delegated by the Secretary to the Research and Special Programs Administration.

The Nuclear Waste Policy Act established a national policy for the safe storage and disposal of spent nuclear fuel and high-level waste. The NWPA places responsibility for providing for the actual transportation of these materials on the Department of Energy and requires that such transportation be subject to the regulations of the Department of Transportation.

The NWPA directs that private industry be utilized to the fullest extent possible in performing transportation functions. Upon request from the Secretary of Energy, the Secretary of Transportation will determine if private industry is adequate to economically perform the transportation services necessary to carry out commercial nuclear waste disposal programs. If such services are not available, DOE may use Federal transportation services. While DOE appears to be fully committed to using the private sector to the maximum extent possible for its transportation services, DOT will be prepared to carry out its NWPA responsibilities by playing an active role in the numerous NWPA planning activities.

DOT and NRC have overlapping regulatory responsibilities. Therefore, in order to coordinate our efforts, we adopted a Memorandum of Understanding in 1979. Basically, the MOU gives DOT the responsibility for developing overall safety standards covering the mechanical condition of carrier equipment, qualification of carrier personnel, loading and unloading, handling, storage, and vehicle placarding requirements. DOT has responsibility for developing safety standards for classifying radioactive materials and the design specifications and performance requirements for packagings of so-called low-level radioactive wastes.

The NRC is responsible for regulating safety in receipt, possession, use and transfer of byproduct, source, and special nuclear materials. Also, NRC reviews and approves packaging design for so-called high-level spent fuel. DOT has incorporated by reference the NRC packaging standards for such materials.

DOT and DOE have shared responsibilities under the Nuclear Waste Policy Act of 1982, and therefore we adopted an MOU in 1985 to assure that there would be no duplication of effort. Basically, that MOU specifies that the management of the transportation of spent fuel and high-level radioactive wastes under the NWPA resides in DOE's Office of Civilian Radioactive Waste Management, and that the transportation of this material to any repository developed under the NWPA will be subject to applicable DOT regulations promulgated by RSPA. The MOU also provides for the establishment of procedures for consultation and the exchange of information.

DOT, NRC and DOE realize that the Congressionally-mandated framework can be confusing at times, particularly to the States. In addition, we recognize the States' interests and concerns in assuring that radioactive materials shipments moving through their jurisdictions are transported in as safe a manner as practicable. In response to their concerns, RSPA is sponsoring—and NRC and DOE are participating in—Federal/State regional workshops designed to exchange information and concerns with and among the States. The workshops will be held annually and will, we believe, result in a more cooperative Federal/State partnership in this endeavor. I should mention that we've just completed two workshops, one in Boise, Idaho, and one in Santa Fe, New Mexico, and we have one coming up in a couple of weeks in Cedar Rapids, Iowa.

With respect to DOT's responsibilities, the Department has promulgated and enforces detailed regulations that govern communications, packaging, shipping, carriage, stowage, and handling of radioactive materials by all modes of transport.

Probably the most extensive hazardous materials rulemaking to date addressed the question of what regulations were required to govern the highway routing of radioactive materials. This rulemaking, known by its docket number and referenced by Congressman Rowland, is Docket HM-164, and requires highway route-controlled quantity radioactive materials to be transported either over the Interstate System highways selected to reduce time in transit, using Interstate System beltways or bypasses when available, or over State-designated alternative routes.

The radioactive materials transportation safety record has been excellent due to this comprehensive body of regulations. In over four decades of transporting radioactive materials, there has never been a death or an identified serious injury due to the release of radioactive materials.

Because of the vast number of trucks carrying hazardous materials, the assurance of regulatory compliance requires more than an exclusively Federal enforcement effort. The Federal/State enforcement partnership is an essential part of the Federal regulatory program. There is an extensive cadre of inspectors who have received various levels of training regarding enforcement of the rules. RSPA is working to expand the number of qualified radioactive materials inspectors through the Cooperative Hazardous Materials Development Program and our nuclear workshops.

I would also like to comment on the current rail shipments of radioactive debris from the Three Mile Island facility in Pennsylvania to the Department of Energy's Idaho National Engineering

Laboratory. As a matter of policy, the Federal Railroad Administration is inspecting the track and signal system over the entire route prior to the start of any nuclear shipping campaign by rail. This rail system inspection is repeated at least every six months. In addition to the rail and signal system inspection, FRA performs a safety inspection of the rail car prior to every shipment, and RSPA performs periodic radiation safety inspections of the casks. This policy is applied to the Three Mile Island shipments and rail shipments from Cooper Station, Nebraska, and Monticello, Minnesota, to Morris, Illinois.

Finally, on April 24, 1987, RSPA's Administrator Douglass mentioned in her statement before the Senate Commerce Committee a number of areas of concern in the hazardous materials transportation area, including nuclear transportation. These concerns are currently being addressed in our hazardous materials transportation reauthorization proposal, which is currently under review by concerned agencies, and I expect that the Department will propose legislation very soon.

Thank you very much, and I will be happy to answer questions.

Senator **Breaux**. Thank you very much, Mr. Roberts.

Next we'll hear from Mr. Hugh Thompson.

STATEMENT OF HUGH L. THOMPSON, JR., DIRECTOR, OFFICE OF NUCLEAR MATERIALS SAFETY AND SAFEGUARDS, NUCLEAR REGULATORY COMMISSION

Mr. **Thompson**. Thank you, Mr. Chairman. I am pleased to be here today to present testimony on behalf of the NRC on the important issue of radioactive materials transportation. I will briefly summarize my comments. I have a written statement which I would like to be entered into the record, with your permission.

In addition, the Commission is currently reviewing the three legislative proposals affecting transportation of radioactive materials identified in your letter of invitation, and we will provide comments on these proposals for the record. (See p. 504.)

I'd like to begin with a brief overview of the shipments of radioactive materials that are occurring, and then describe our interactions with the Department of Transportation and the Department of Energy on these activities.

A recently-completed study identified that approximately 2.8 million packages containing radioactive material are being commercially shipped annually. These packages range from smoke detectors containing very small amounts of radioactive materials to spent fuel rods containing very large amounts of radioactive materials. The majority of these packages contain only small amounts of radioactive materials which are used for medical purposes.

Mr. Roberts has provided an excellent summary of our joint regulatory approach to ensure the protection of the public health and safety and the environment, and I think that has been identified.

Our role deals with the commercial shipments of radioactive materials such as spent fuel, which must be made in Type B containers that have been certified by NRC as meeting performance standards and constructed in accordance with an approved quality assurance program. Inspections are conducted during the manufacture of these containers, and these containers are also inspected at the beginning and end of each shipment to ensure that these containers are performing as they were intended.

In addition to packaging requirements, NRC reviews and approves the shipping routes for susceptibility to sabotage or diversion of spent fuel shipments. The record shows that the system of regulation and the transportation process is both safe and secure. The Office of Technology Assessment study that was noted earlier by Ms. Page concluded that the probability of an accident severe enough to cause extensive damage to public health and the environment caused by a radiological release from a properly-constructed cask is extremely remote.

The adequacy of the existing NRC regulations was recently evaluating by postulating the spent fuel shipments that had been involved in some of the most severe industrial traffic accidents that had been recorded. Engineering models were used in this study to calculate the minimum structural and thermal responses that should be achieved by NRC-licensed casks. These calculations project one accident in about 40 million miles of travel would cause functional cask damage, even though the radiological risk of this postulated accident would remain within the package acceptance criteria for material release and external radiation levels. One accident in about 80 million miles of travel could cause significant cask damage, leading to a radiological risk slightly in excess of the acceptance criteria, while one accident in about 1.5 billion miles of travel could cause a radiological hazard about 10 times the acceptance criteria. And I should note now that the predictions made under such unlikely accident conditions as this last one are certainly subject to some uncertainty.

To put these results in some perspective, estimates based on Department of Energy data indicate that about 40 million miles of truck cask travel would be required to transport spent fuel presently stored in reactors to a repository. Another way to look at that would be one severe accident every 13 years would be expected to result in some minor functional cask damage.

I would now like to describe our interactions with the Department of Energy on transportation matters under the Nuclear Waste Policy Act. The NWPA clearly establishes DOE's responsibility to develop, operate and maintain the transportation system required for the high-level waste disposal system. In general, neither the NWPA nor other law requires DOE to use NRC-certified packages or follow NRC's other transportation requirements for shipment in which DOE is the shipper. However, DOE is subject to DOT transportation regulations and, of course, to DOE's internal transportation requirements. The extent to which DOE follows NRC transportation requirements for NWPA shipments, though, is a matter of DOE policy. That policy, as stated in DOE's mission plans, transportation business plan and other documents, is to use NRC-certified casks for NWPA shipments and to comply with all NRC and DOT transportation regulations in effect at the time of the shipment.

With regard to specific interactions, NRC and DOE have concluded a procedural agreement on spent fuel and high-level waste transportation packaging that specifies transportation planning assumptions and provides for exchange of information. NRC, DOE and DOT have held periodic meetings under this agreement in which the transportation issues have been identified for further discussions and consideration.

NRC's review of DOE's draft environmental assessment for the nine original candidate sites for the first high-level waste repository included an examination of DOE's transportation analysis. DOE has adequately addressed NRC comments in their final environmental assessment. Although not required by the NWPA, DOE has issued for public comment a transportation business plan and a transportation institutional plan to provide general information and guidance on the development of the NWPA transportation system. In comments to the DOE staff on the business plan, NRC staff stated that "available NRC resources could not support simultaneous reviews of a large number of new cask designs."

With regard to the institutional plan, NRC staff provided comments to clarify the role described in the plan and suggested organizational and editorial changes.

We would expect DOE shipments, conducted in accordance with our rules and practices, to provide the same level of protection to the public health and safety and the environment as that previously described for commercial shipments.

As you know, in the event of a radiological emergency involving a transportation accident, local and State personnel have primary responsibility. FEMA coordinates the Federal support, and NRC normally serves in an advisory capacity to the States.

In summary, the current approach to the regulatory shipment of radioactive material has a sound basis and the safety record for radioactive material transport provides a high degree of protection to the public and the environment.

With that, Mr. Chairman, I conclude my summary statement.

Senator **Breaux**. Thank you, Mr. Thompson.

Mr. Barrett, we'll take your testimony.

STATEMENT OF LAKE H. BARRETT, DIRECTOR, TRANSPORTATION AND WASTE SYSTEMS, OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT, DEPARTMENT OF ENERGY

Mr. **Barrett**. Thank you, Mr. Chairman, members of the subcommittee. Good morning. I appreciate the opportunity to appear before you today to offer testimony on the Nuclear Waste Policy Act transportation program that we are developing in our office. Our office has the responsibility to develop that program, both the technical aspects of it and the institutional aspects of that same program. We are working very hard to be sensitive to the concerns of State and local organizations as we develop the technical aspects of our system.

The institutional plan that has been referred to by the previous speakers was issued last year. We developed this plan to address over 16 issues that are the concerns of the various State, local and tribal jurisdictions. We are working very hard to try to find mutually-acceptable solutions to handle these very complex and difficult issues.

I would like to discuss several of these issues, whose threads run through the proposed bills that we have been asked to comment on.

Emergency preparedness is an issue that comes up all the time, and we are working very hard to try to address the concerns of States, Indian tribes and local officials in this very difficult area. Our approach is to improve and build upon the substantial program that presently does exist within the Federal establishment and the Department of Energy. We are working very hard with our sister Federal agencies to improve the coordination amongst the Federal agencies, and also between the Federal and State programs. For example, we have trained over 5,000 officials in 39 States and we maintain 28 expert emergency response teams on call throughout eight regions in the United States presently. We believe that improved interface and improved communications on exactly what the Federal and State roles will be mutually beneficial to all the parties concerned.

Routing is a very difficult and complex issue. It is a very hard issue for State and local officials to contend with because of the complexity and the emotionalism that goes with high-level nuclear waste shipments. Because it is a severe problem to them, it also becomes a severe problem to us and we are doing everything we can to try to find a national solution to this issue while still respecting the concerns of those officials and the general public. Our approach is to help foster public understanding of the cask integrity and the cask safety concepts, which are difficult to communicate to the general public and officials. We are also working to assist States and localities to implement the preferred routing aspects that are presently in existence through the existing legislation and the DOT regulatory framework. We are putting the resources of the Department at State and regional groups' disposal to assist them in trying to determine if there are better routes for highway routing of nuclear spent fuel and high level wastes. We hope through continued hard work that we can overcome some of the problems that have been discussed here this morning.

State inspection is another issue that comes up all the time. We in the Department strongly encourage a coordinated, uniform State inspection program that is independently performed. We have entered into a cooperative agreement with the Commercial Vehicle Safety Alliance, which is a group that represents State inspection agencies, to develop a uniform State inspection program for highway trucks that would carry high-level nuclear waste and spent fuel. We believe that a coordinated national program with reciprocal agreements between States and Indian tribes is the best way to afford independent inspection, and also a national need to move the material in a safe, economical manner.

I would also like to enter into the record written testimony provided by Ms. Lytle on May 12th before the Surface Transportation Subcommittee, which also addressed nuclear transportation and other DOE programs. (See p. 520.)

If you have any questions, I would like to answer them.

Senator **Breaux**. Thank you very much, members of the panel.

Do you have any comments about the situation that Congressman Rowland presented to the committee with regard to the New York and Connecticut situation? This has occurred under the current law. Congressman Rowland says the current law is defective; you are in charge of implementing and carrying it out. Do you agree with his statement? If you do, can you make any recommendations on how it should be corrected?

Mr. **Roberts**. I guess the question is to me, Senator. I can't disagree with the Congressman, since I've been involved in this issue for approximately 10 or 11 years. We went through the rulemaking process, and it was probably the most laborious rulemaking in our history in terms of time consumed, the public process, public hearings—the thousands of comments that were generated.

We felt that we carried out properly and correctly our regulatory responsibility. The issue now is in the courts. It would certainly be inappropriate for me to go into any great detail. As stated by the Congressman, on March 2nd, 1982, the City of New York brought a legal action against the Department of Transportation and my agency, in the U.S. District Court for the Southern District of New York. The City is contending that the denial of its request for waiver of preemption was illegal and that it is entitled to the waiver. We're in the process now of responding to the action.

We do believe that there is possibly a need for some legislative initiative in this area to clarify the Department's role in the inconsistency/preemption area, and have a stronger statement from Congress as to its position relative to the operation of this particular aspect of our program. The reason for this is that we have a very short statement in the Act now that says that any rule of a State or political subdivision that is inconsistent is preempted. It was up to DOT to take some general guidance from the Congressional history and to draft procedural rules, which we did, and then begin to operate the program. And so far, we have issued 18 inconsistency rulings.

Senator **Breaux**. How many?

Mr. **Roberts**. Eighteen.

Senator **Breaux**. Did the DOT issue a preemptive rule in the New York City litigation?

Mr. **Roberts**. It was a denial of nonpreemption.

Senator **Breaux**. Of nonpreemption?

Mr. **Roberts**. We did not permit the New York City ordinance to stand as a result of our ruling.

Senator **Breaux**. That was DOT's decision to not allow the New York City rule to stand?

Mr. **Roberts**. Yes.

Senator **Breaux**. In other words, it would not be possible under the existing law to have a State say, in order to protect the health and safety of its citizens, we're going to adopt legislation on a State level which would absolutely prohibit any transportation of hazardous materials across the State's borders?

Mr. **Roberts**. No, I really can't answer it that way. The question here—and this gets a little complicated, and I'm skirting around the lawsuit—if I can just address the concept in the general sense.

First of all, we adopted regulations which went into effect some years ago, about seven years ago, under our Docket HM-164, which provided a general provision that said that the designated Federal route for these materials is the Interstate Highway System, including, when available, beltways and bypasses. In the same procedure we established very specifically a mechanism for a State to designate alternate preferred routes through a State routing agency. We defined it in our regulations. Unfortunately, many of the States, including New York, have not designated State routing agencies. About five or six States have; we could provide you a list of the ones we're aware of.

The problem without the exercise through the State routing agency is the next step down which is to have routes designated by counties or cities; then you expand from 55 jurisdictions at the State level to more than 20,000. It depends on whose statistics you use, but we know that there are more than 20,000 entities within the United States that have authority to write laws, ordinances or regulations that may affect transportation.

Chaos would prevail; that's the general premise. We must stick with the State-level determination. We look at whether an action is, in effect, exporting the risk to an adjacent or other jurisdiction. We examined in some of the rulings as to whether there is regional-wide coordination, and a good example of regional-wide coordination in hazardous materials routing, even in the non-nuclear area, is the Dallas-Fort Worth area. They have set up a regional-wide routing program for hazardous materials.

Other jurisdictions have looked at their routing circumstances in isolation, only looking within their own corporate jurisdiction, not taking into account the effect of what they are doing to other jurisdictions. Increased mileage means increased exposure. Other problems prevail by moving the risk to some other location.

Senator **BREAUX**. My general question is, does DOT have the authority to designate approved routes in the absence of the State doing so or the local community doing so?

Mr. **ROBERTS**. Yes, sir, and we've done so.

Senator **BREAUX**. Senator Simpson?

Senator **SIMPSON**. Thank you, Mr. Chairman.

Mr. Roberts, for a State that wants to propose an alternative route to avoid, say, a highly populated area or a beltway around a major city, what options do they have? Can they suggest or require that an alternate route be used?

Mr. **ROBERTS**. I can just read you right from our regulations, Senator, which might be the best way to answer it.

Under 49 CFR 171.8 we define a State routing agency. It means "an entity, including a common agency of more than one State, such as one established by interstate compact"—the Port Authority of New York and New Jersey, for example—"which is authorized to use State legal process" pursuant to another reference, "to impose routing requirements enforceable by State agencies on carriers of radioactive materials without regard to intrastate jurisdictional boundaries. This term also includes Indian tribal authorities which have police powers to regulate and enforce highway routing requirements within their lands." That's the definitional structure for a State routing agency.

Now, under that, you go to the term, "State designated route," the route that's the alternate to the Federally-designated use of the Interstate highway system as the Federal preferred routes. "State designated route means a preferred route selected in accordance with U.S. DOT 'Guidelines for Selecting Preferred Highway Routes for Large Quantity Shipments of Radioactive Materials,' or an equivalent routing analysis which adequately considers overall risk to the public. Designation must have been preceded by a substantive consultation with affected local jurisdictions and with any other affected States to ensure consideration of all impacts and continuity of the designated routes."

For example, the State of Maryland, the State of Virginia and the State of Delaware got together. They wanted to stay off the Kennedy Highway. They got together; they did their analysis and came up with a route off the Interstate Highway System. This says, you must meet at the State border. You can't have someone running up U.S. 40 to the State line and then park the truck. They did this. They filed it with us. Nobody is complaining; it has worked. Other jurisdictions have not chosen to involve themselves in this process, and there lies one of the basic gut problems of this situation.

Senator SIMPSON. Well, it is indeed. It's one that we confront with regard to siting of nuclear facilities, when you get right down to that, and emergency planning and that type of thing. That's another story.

But what role do you play in the approval of casks for transporting spent nuclear fuel by NRC licensees?

Mr. ROBERTS. We have an MOU with the Nuclear Regulatory Commission. We have two levels of packaging, what we call Type A and Type B. Type A is the packaging that is most commonly used for things like moving radiopharmaceuticals. And by the way, approximately one out of every seven to eight people admitted to a hospital in the United States receives either diagnostic or radionucleid treatment while they're in that hospital, so it's a big, big part of our business, and virtually all of the incidents we've ever had in radioactive materials movement have been in the radiopharmaceutical area. These are Type A packagings. They are commonly referred to by people as low-level radioactive materials.

The so-called high-level radioactive materials go in Type B packages, such as spent nuclear fuel in casks. Under the MOU arrangement, and by incorporation by reference in the DOT regulations, the NRC does the evaluation and certification of the large quantity radioactive material packages.

Senator SIMPSON. If a State, say, decided to establish that they would not allow that product to be out on the Interstate during rush hour or whatever they decided to do, for example, could a State do that? Or does your analysis assume simply that these shipments are safe at any time upon the designated route?

Mr. ROBERTS. As a general proposition, I would have to say that we would consider such a provision to be inconsistent or contrary to our Act. We had a case, one of the very first rulings, that involved the State of Rhode Island, which said that you couldn't bring liquefied natural gas and propane into the State except at certain hours. In effect, in terms of scheduling the flow and movement of these materials, you could end up with materials piled up at the border unless you're going to do a very elaborate schedule all the way back in the system. And if you started to have more than one jurisdiction doing this, you'd never make it work. It's happened. We've had this problem with explosives moving for the Department of Defense where they end up parking the trucks along the highway, and we do not consider delay or parking of hazardous materials shipments in rail yards or along the shoulder of highways to be good practice. As a matter of fact, we have rules against it.

Senator **Simpson**. Just a final question. For those highly radioactive materials that are required to be carried in Type B containers or casks, how much of that is presently being transported right now? Where is it coming from, principally, and going to? And how much is DOE waste versus NRC licensee waste? And what will be the future quantity on that?

Mr. **Thompson**. It might be appropriate for me to respond to that, Senator.

In the last couple of years we have had between 100 and 200 shipments of spent fuel in the Type B containers, and I think that's the area that you're looking at. Those shipments include some transshipments between reactors themselves; that is, for spent fuel storage capacity. Some are in cooperation, maybe, with the Department of Energy to the Department of Energy's sites such as Idaho, so there would be some transshipments across many States getting out to the Idaho storage facility. Those are the types of shipments that we have, some 75 to 100 tons or so a year of shipments of the spent fuel.

Senator **Simpson**. How many vehicle loads might that be?

Mr. **Thompson**. Approximately 100 to 200 vehicles. It depends on whether they're trains or truck shipments, but for practical purposes let's say 100 shipments per year.

Senator **Simpson**. Thank you, Mr. Chairman.

Senator **Breaux**. Senator Symms?

Senator **Symms**. Thank you very much, Mr. Chairman.

I thank all of you on the panel for your testimony this morning. We had an incident last summer in Idaho where a truckload of radioactive material, and I'm not sure whether it was Type A or Type B, dumped over, upside down in the Snake River.

Mr. **Barrett**. It was Type A.

Senator **Symms**. Type A. The response team was there from the Inel site in a very short period of time. In fact, they got there before the commercial television stations could, and had the area secured, had checked it out with geiger counters and so forth. So I think it was very impressive that some of the work that some of you have been doing has been paying off to the general public. I know that I myself was impressed that the response time was so rapid, and the assurance and the cleanup and getting the truck out of the river happened so rapidly, with no spillage of nuclear material.

But the question I want to ask is, I understand you've had some training seminars, Mr. Roberts, around the country that you've talked about here, but what do you do—we happen to have the people there at Inel that have the expertise to do this. What happens in an area where they're further away? Who goes in and checks that if you do have an accident?

Mr. **Roberts**. Senator, some years ago, after another extensive rulemaking, we adopted an emergency response system in DOT tied to the shipping name of the material and an internationally-recognized or universal identification number. If you look at the placards on tank cars and tank trucks, you'll see the four-digit number. Tied to that number is a DOT emergency response guidebook. We have issued two editions of the guidebook without charge to police and fire departments throughout the United States, a grand total of more than 1.5 million copies so far, and we're about to issue the 1987 edition.

This document, through a system of referencing numbers plus an alphabetized list so that they don't get mixed up with long chemical names and numbers, refers to all hazardous materials, including the various levels of radioactive materials. In the guidebook is guidance and a single call system to an 800 number that is available seven days a week. I tested this system, as a matter of fact, for a radioactive materials incident in Boston on a Saturday about a month ago.

The call goes to a 24-hour, 7-day number that is for all military or commercial shipments of explosives and chemicals, radioactive materials, and from there they key in to the DOD teams for military explosives. Now, the instruction to the fire or police service—basically, the most simple statement is "if you don't know, don't go." And great emphasis has been placed on emergency services in recent years, not to involve themselves intimately with the event if they have not received the appropriate training.

So to respond to your question, if you're out in a remote area, our instruction would be to make the call, protect the scene, keep people away.

Senator SYMMS. Let the experts get there?

Mr. ROBERTS. That's correct, sir. And back in the 1960's we had a number of events that involved serious consequences to fire and police officers, and I'm pleased to say that this kind of incident has been vastly reduced in recent years because of increased training on the part of not only Federal programs, but also the associations that deal with the emergency services.

Senator SYMMS. I don't recall the type of container, but in other words Type A would be like medical—what you call low-level?

Mr. ROBERTS. In most cases, yes, sir.

Senator SYMMS. It would be in a metal container?

Or barrels? I don't remember what——

Mr. ROBERTS. It's interesting that you raise the question that way. If I can give you a statistic, in the period of time that we've been keeping records—and I respect Ms. Page's point about unreported events; I think in this area, though, we probably had overreporting—we've had 717 incidents reported involving radioactive materials since 1970, and that's against over 30 million movements. Now, most of those were these packagings you're talking about, which is usually a double containment system. You have an inner metal vessel centered by cardboard dividers, for example, for a radiopharmaceutical, to keep it centered in the box. And it may move by aircraft to go to your local hospital. Quite often one would fall off the baggage cart and the outer box would be damaged so that you would see the metal containment unit inside that holds the vial that's going to end up being used in the injection. That's reported as an incident, and those kinds of events cause quite a stir. But due to the containment system, even then there is not a great risk posed to people in the baggage handling area or the emergency responder. We've had very, very few events—there have been some, but we've had very, very few events where the radioactive material itself, the actual material, was discharged during transport.

Senator SYMMS. Well, I don't recall just how far that truck rolled over and was upside down in the river. I don't remember how far it fell, but it was the ideal situation that would be the kind of situation that would scare you, if you think about a radioactive material in the river and all the implications of that. Nothing was spilled, so I assume that something that you've been doing to the container regulations has obviously been very helpful.

Now, just to get back over very briefly, Mr. Chairman, and I'll yield back the floor.

You have the training seminar like the one you had in Boise recently. This is to train State Police officers, local Sheriff's officers, other people involved on what to do and how to read the books so that they would know, if they did have an incident, what the procedure would be. Is that correct?

Mr. ROBERTS. Well, I wouldn't characterize that session as formal training. It was more an informational seminar with State and local officials. We had Indian tribes, we had State health physicists and State transportation officials there. I would not characterize it as in-depth radioactive materials training. Most of the people there—not all, but most of the people there had already received some hazardous materials training and nuclear training.

In my longer statement we mention the formal training. To date we've given—in just the last four years we've had more extensive training, mostly for enforcement purposes, through our training institute in Oklahoma City, of 198 people that we would say were in-depth trained. You provide this training in various degrees and levels. You have the State health physicist, who is highly trained, and you work backwards to the local law enforcement officer who you want trained, but not necessarily in great depth.

Senator SYMMS. Okay.

Thank you very much, Mr. Chairman.

Mr. THOMPSON. Mr. Symms, I want to just add two points here, if I could. The records that I have note that there have been almost 2,000 packages, of the Type A that we just talked about, that have been exposed to accident conditions, and the number of packages that had failed with the release of some of the radioactive material was only 11 out of the 2,000. And even in those cases, there was not a total release of the material.

Senator SYMMS. On a Type B container, which would be more sensitive—is that correct?

Mr. THOMPSON. That's correct.

Senator SYMMS. Have you ever had one of those containers fail?

Mr. THOMPSON. We have had 51 of those in the time frame between 1971 and the data which ended in March of 1985—51 were involved in accident conditions, of which there were no package failures and no releases of radioactive material.

And the point I think I wanted to clarify, when Mr. Roberts said earlier that people had received some serious exposure and damage when responding to the accidents, I don't believe he was talking about damage in responding to radioactive material that had been released. I think it was probably some other hazardous material.

Mr. ROBERTS. That's correct. I appreciate the clarification, Senator. I did not mean that was radioactive materials. It was a general sense of the emergency response industry responding to tank car accidents, for example.

Senator SYMMS. Thank you very much.

Thank you, Mr. Chairman.

Senator BREAUX. Thank you, Senator. Ms. Page, let me ask you, in OTA's opinion, what is the weakest link in the transportation system that we have? Is it the human error? Or is it the hardware, the equipment, the roads, the trucks, the packaging? Or is it something else?

Ms. PAGE. We found it to be human error, Senator. It's very difficult to ensure, as I said in my testimony, that each person behaves exactly as he is supposed to behave and follows even a carefully-devised checklist for quality assurance such as the NRC provides during cask manufacture and inspection.

When I mentioned the violations that Washington State found in its port of entry inspections, many of those were for vehicle failures; that is, not the casks themselves or the containers, but for defects in the vehicles, brakes or improper labeling, one thing or another of that sort. And those come from human error at some point along the system. It is not because the mechanics fail. I think I—we found throughout our report that the regulations themselves do provide for adequate safety. It is when we get to carrying them out that the problems begin.

Senator BREAUX. Is anyone recommending any additional standards for those people involved in the transportation activities? We can write the best regulations, but if we don't find the right people to carry them out or if they're incapacitated for whatever reason, the whole thing is not going to work. I guess one of the questions we have is, do we need to pay more attention to that area?

Ms. PAGE. That's a good question. There are training standards being developed in conjunction with the single driver's license law that the Congress passed last October.

The issue of training has been a very difficult one for DOT to deal with. It does not fall under the section of DOT that Mr. Roberts works in; it falls under the Federal Highway Administration. They are still in the process of developing their training requirements, and it would be a bit premature for me to comment on them since we don't know what they're going to be finally.

OTA did suggest that mandatory training for drivers and operators, including how to handle and how to load trucks or vehicles carrying hazardous materials, was an extremely important part of a safety system.

Senator BREAUX. I think this panel has been very helpful. We have two additional panels that will appear this afternoon. I want to thank this panel very much for the work that they've done in this area. We may have some follow-up questions that we'll submit to you.

This panel will now be excused, and the committee will stand in recess until 2 p.m. this afternoon.

[Whereupon, at 12:13 p.m., the subcommittee was recessed, to reconvene at 2 p.m. the same day.]

AFTER RECESS

Senator **BREAUX**. The subcommittee will please come to order.

This afternoon we will call up our second panel: Mr. Robert Bishop, Special Counsel for Northeast Utilities, on behalf of Edison Electric and the American Nuclear Energy Council; Ms. Melinda Kassen, who is a staff attorney for the Environmental Defense Fund; and Dr. Fred Millar, Director, Toxic Chemicals, Safety and Health Project for the Environmental Policy Institute. If you would come up, we would be very pleased to receive your testimony.

Mr. Bishop, we have you listed first, if you would like to go ahead.

STATEMENT OF ROBERT W. BISHOP, SPECIAL COUNSEL, NORTHEAST UTILITIES, ON BEHALF OF THE ELECTRIC UTILITY COMPANIES NUCLEAR TRANSPORTATION GROUP, AMERICAN NUCLEAR ENERGY COUNCIL, ATOMIC INDUSTRIAL FORUM, AND THE EDISON ELECTRIC INSTITUTE

Mr. **BISHOP**. Good afternoon. I'm appearing before you this afternoon representing the Electric Utility Companies' Nuclear Transportation Group, the Atomic Industrial Forum, the American Nuclear Energy Council, and the Edison Electric Institute. Together, these organizations represent virtually all the electric utilities with nuclear power programs.

My written testimony has been filed with the subcommittee staff and I'll take this opportunity to briefly summarize that testimony.

The utilization of radioactive materials by private industry for the production of electric power, for medical treatment and diagnosis, for research and for a variety of industrial processes necessitates producing radioactive waste which must be carefully handled, stored, transported and disposed of. There are 2.8 million packages per year of radioactive material shipped, as testimony has already been entered. It ought to be helpful to point out that only about 4 percent of those 2.8 million packages per year are associated with the generation of electricity at commercial nuclear power plants.

Congress recognized the importance of transportation in its passage of the Nuclear Waste Policy Act by explicitly assigning that responsibility to the Department of Energy. It is our opinion that legislative changes are not required to ensure that radioactive materials can be shipped safely. That's the essence of the testimony I provided to the Surface Transportation Subcommittee at its hearing on the Hazardous Materials Transportation Act reauthorization on May 12th.

Nevertheless, the anticipated volume of shipments that will occur under the Nuclear Waste Policy Act has caused concern over whether the existing regulatory framework that will govern these shipments is adequate to ensure safe transportation. Transportation is the critical link between the individual reactors and the Federal disposal facilities or an MRS. Safe transportation is critical to the continued operation of nuclear power plants, critical to the many States and localities that will be affected by those shipments, and critical to the safe and efficient functioning of our national waste management system. It is also critical to the taxpayers of those same States and localities, and very critical to the electric utility customers, who have already contributed more than $2.9 billion to fund the Department of Energy's waste activities.

Accordingly, this effort must proceed successfully and economically to fruition. Under the leadership of Mr. Rusche, Mr. Hilley, and most directly Mr. Barrett, whom you heard from this morning, the Department of Energy has made significant progress in the transportation area, both in planning and in plan implementation.

DOE also has demonstrated a willingness to listen and to learn which is at the very least, I am told, very unusual for a Federal agency. We don't always agree, and they probably don't always agree with others either, but they have been willing to listen. A very tangible step to this process will soon be taken in the awarding of contracts for the development of the casks that will be used to transport spent fuel from individual reactors to the Federal facilities.

There is one thing that can't be overemphasized, in my judgment. There presently exists a comprehensive Federal regulatory system that has been established by the Department of Transportation and the Nuclear Regulatory Commission pursuant to express statutory authority. This regulatory system, in combination with the responsibility taken by shippers and carriers, has proven to be effective in establishing a history of safe spent fuel transportation that is unparalleled and that was described for the record earlier this morning. I don't believe that's just luck. I believe the testimony clearly establishes the basis of that record.

Shipments by DOE under the Nuclear Waste Policy Act will be conducted pursuant to those same DOT and NRC regulations. Specific aspects of the planned Federal program, such as the cask design criteria, routing and emergency response preparedness, are all addressed in my prepared testimony.

To provide the subcommittee with a little perspective, it has been estimated that approximately 1,000 shipments each year will take place under the Nuclear Waste Policy Act. For comparison, over the last 20 years about 300 spent fuel shipments have taken place each year. Thus, the Nuclear Waste Policy Act shipments do not constitute an unmanageable burden. As Ms. Page pointed out in her testimony, compared to the roughly 100 million packages of hazardous materials that are shipped in the United States each year, the volume of anticipated spent fuel shipments remains a very, very small proportion.

It also should be remembered that spent fuel is a dry, solid material, and it is shipped dry. It cannot leak or spill, as those terms are frequently thought of, and it cannot explode, like many other hazardous materials. By its very nature, however, it can be dangerous, but history demonstrates that it also can be handled safely, and that includes its ability to be shipped and the protection provided by the exceptionally durable containers, the casks, in which it is shipped.

Again, as a point of perspective, my understanding is that the modern generation of spent fuel casks for rail shipments, which are what the Department of Energy anticipates using predominantly, weigh about the same as four Sherman tanks. We're talking about a very strong and solid piece of equipment.

The Nuclear Waste Policy Act charges DOE with the responsibility for ensuring the safe geologic disposal of this country's spent fuel in a timely manner, which includes transportation to the appropriate Federal facilities. We, as experienced shippers and as stewards of the funds contributed to this effort by our customers, will continue to provide oversight of and guidance to DOE as it carries out its responsibilities to the Congress and to the Nation. Failure of this task to be done, and done right, cannot be countenanced.

Thank you, Mr. Chairman.

Senator **BREAUX**. Thank you very much, Mr. Bishop.

Ms. Kassen?

STATEMENT OF MELINDA KASSEN, STAFF ATTORNEY, ENVIRONMENTAL DEFENSE FUND, DENVER, CO

Ms. **KASSEN**. Mr. Chairman, good afternoon. On behalf of the Environmental Defense Fund's 50,000 members let me say that I appreciate this opportunity to address the subcommittee.

We are all working with different numbers here, but from an average of approximately 100 metric tons of uranium shipped per year over the past decade, we are poised for spent fuel shipments to the repository of 3,000 metric tons of uranium per year. So although there have been no accidents involving radioactive releases yet, I submit that given the quantum leap in shipments which will occur under the Nuclear Waste Policy Act, the historic record should not allay all your fears. As set out in my written comments, there have been numerous discoveries of cask defects when those casks were in use, and there has been little in terms of inspection of cask manufacture or maintenance.

In addition, DOE expects to open the Waste Isolation Pilot Plant in New Mexico next year. It will receive an annual 1,200 shipments on the average of transuranic, which is plutonium-contaminated, Defense waste in loads of up to 12,000 curies of radioactivity each. Most of these shipments originate in Idaho, Washington and Colorado, but WIPP shipments will pass through 29 States in total, including Louisiana. And DOE is still seeking to use the TRUPACT, a container it designed for WIPP which does not meet NRC certification criteria for this campaign.

Before either the WIPP or spent fuel shipments start, EDF believes the Congress must refashion how this country regulates nuclear waste transport. We urge you to embrace a scheme of enhanced Federalism. This would allow Federal agencies to focus on four things.

First, long-term planning for the two upcoming, large scale shipping campaigns, which means developing thorough, all-inclusive cost and risk assessments for the spent fuel and transuranic waste shipments, and a comprehensive least-risk analysis of transportation modes and routes. Neither has been done to date.

Second, ensuring the safe design, manufacture and use of nuclear waste shipping containers.

Third, a comprehensive inspection program of carrier, terminal and storage facilities to enforce safe loading of materials and compliance with industry-wide maintenance and safety standards.

And fourth, promulgating a comprehensive regulation for carriers that encompasses everything from minimum operator training standards to mode-specific maintenance protocols to a national registration system.

An enhanced Federalism system would then leave to States, tribes and local governments the responsibility and authority to do inspections and enforce safety regulations in transit, including the establishment of stop times, rest locations, speeds and escorts, and to establish surface routes through their jurisdictions. This authority would necessarily carry the right to assess fees to fund these programs unless Congress creates a national funding mechanism structured to allocate funds to corridor governments.

Turning to the three bills this subcommittee is considering, and starting first with S. 833, EDF supports the rights of States, in consultation with localities, to identify those routes within their jurisdictions that are the safest, after consideration of the populations at risk, rail and highway quality, contiguous routes with neighboring jurisdictions, the need to minimize switching tracks or carriers, emergency response preparedness, public input and other relevant factors. But S. 833 represents only a fragment of a comprehensive safe transport scheme and would be more effective if incorporated into a larger, overall safe transport scheme.

EDF supports S. 1008's concept of a national licensing system, although we question whether it wouldn't be better for DOT rather than NRC to have the authority over shipping.

With regard to S. 1269, EDF also supports Senator Wirth's bill. Grants to the States for the designation of routes fits well within our vision of enhanced Federalism. Annual registration could provide useful information, but it will only work if DOT commits both to using the information for enforcement and inspection activities, and to passing that information on to State and local officials.

EDF lauds the increased funding to States for emergency training and the establishment of minimum training standards, and obviously the bill's mandated analysis of risks to health, safety and the environment and of least-risk alternatives is precisely the sort of study we believe is necessary, although this provision of the bill lacks two things: one, an assessment of the risks associated with the transport of transuranic waste, because that shipping campaign begins next year; and two, an analysis of routes leading not only to the five nominated sites for the first repository, but to all potentially acceptable sites for each repository.

In sum, these bills could serve as a basis for restructuring the transport of nuclear waste so as to minimize risk to public health, safety and the environment. But none of these bills halts the repository selection process or the opening of the WIPP pending a resolution of transportation and other technical issues.

To ensure that these programs adequately address transportation costs and risks, EDF has concluded that a time out may be necessary and that dry cask at-reactor storage is the safest near-term solution.

Thank you.

Senator **Breaux**. Thank you very much, Ms. Kassen.

Doctor Millar?

STATEMENT OF FRED MILLAR, DIRECTOR, TOXIC CHEMICALS, SAFETY AND HEALTH PROJECT, ENVIRONMENTAL POLICY INSTITUTE, WASHINGTON, DC

Mr. **Millar**. Mr. Chairman, I appreciate the opportunity to testify before you.

The Environmental Policy Institute is a national environmental organization specializing in energy, water, toxics, and agriculture issues.

As you may know, current Federal law and recent court decisions put the issues of nuclear waste transport squarely within the larger context of hazardous materials transportation. We've seen the nuclear waste transport issues emerge as the leading edge of similar issues with overall hazardous materials transport. On routing issues, for example, the Department of Transportation's 1981 regulation, HM-164, which was historically and expressly a Federal preemptive response to New York City's 1974 ban, was narrowly crafted to apply only to nuclear materials transport by truck, but with an explicit DOT statement that further routing regulation for other hazardous cargoes and other modes was not precluded for the future. They have not gone on to do that.

Routing issues have subsequently risen to the fore for non-nuclear cargoes, as have issues of hazard assessment, namely, the evaluation of worst-case consequences of accidents for various cargoes, which an early document, (NUREG-0170), from the U.S. Nuclear Regulatory Commission estimated for nuclear shipments.

In nearly any discussion of nuclear cargoes, someone will argue—often persuasively—that there are more dangerous cargoes on U.S. highways and railways than even nuclear irradiated fuel, and that the former are less well protected in their packaging. Public concern for and the visibility surrounding nuclear cargoes, however, have resulted in unchallenged Federal hazard assessment studies focused on health effects. For example, the Sandia Urban Study of 1979, which was explicitly geared to New York City, outlined in detail the catastrophic effects that even a 1 percent release from a cask of nuclear irradiated fuel could have in a densely populated area, namely, thousands of latent cancer fatalities and up to $2 billion in property costs. We have only recently begun to learn, after Bhopal, that we are not as well informed about the potential effects of phosgene, ethylene oxide, acrolein, and other ultrahazardous cargoes.

A crucial public policy need which we'd like to focus on in hazardous materials transportation overall, including nuclear, is to achieve a vastly improved situation of informed consent. The current situation is that most U.S. citizens are in more or less blissful ignorance of the real hazards they are exposed to in the transport of nuclear and other hazardous cargoes. The new Superfund Title III law, the "Community Right-to-Know and Emergency Planning" law enacted in October, 1986, will soon allow citizens living near major chemical plants to get the company's worst case hazard assessments, and to do their own, as an integral part of the emergency planning process. But no city and State officials that I know of have obtained from the shippers of the most dangerous cargoes their worst-case hazard assessments for an accident in their jurisdiction. Even in cases where the city officials are doing a study currently of hazardous material cargoes risks—for example, in Denver—when they requested information from the major carriers, the annual hazardous materials shipment information from the railroads is widely regarded as suspect.

Now, on the question of informed consent, it's fair to say that many shippers of the most dangerous cargoes really would like to ship their materials in the United States virtually invisibly—with as little public scrutiny as possible. Besides an unwillingness to share their hazards assessments for worst-case accidents, they want them to move virtually unnoticed through the general population. Sometimes I give a kind of a litmus test for the U.S. Department of Energy on this. I ask them, what very conspicuous color do you intend to paint your nuclear casks that will move across the country? And that question tends to confound them in public meetings because, in the first place, they don't even want to think about it. They generally want their containers to move relatively inconspicuously.

I point out that the principle of conspicuity—conspicuousness, if you will—is a very respectable principle in hazardous materials transportation, and it's vital for the protection of transportation workers, for example, in railroad switching yards. It's also vital for emergency response personnel so they'll know what kind of an accident they are responding to in case the dangerous cars are hard to identify, as they often are due to smoke, fire, or the placards' having been destroyed or scraped off.

Difficulty in identifying dangerous rail cars is one of the more frequent serious problems in emergency response to derailments, as in the case of the unrecognized sulphur car in the recent Miamisburg accident. By the way, arguments alleging that sabotage is a problem if these shipments are made visible have no merit. Congress already decided in 1980 that the routes for high-level nuclear waste shipments shall be made public, over the objections of the Nuclear Regulatory Commission and the nuclear utilities.

There is a U.S. chemical company that ships an extremely dangerous cargo, hydrogen cyanide, in very large rail cars. They voluntarily paint a big red stripe around their bright white cars. It is called a "candy stripe" car, precisely in order to notify emergency responders and rail workers. In Canada, new national regulations call for a one-foot-wide orange stripe around all rail cars with compressed gases. In the U.S., the National Transportation Safety Board has asked the Chemical Manufacturers Association to suggest that the most dangerous U.S. hazardous materials rail cars be color-coded. CMA reportedly disagrees, and instead they are studying a method of installing transponders, which are apparently little radio transmitters on the rail cars which would send a signal to notify emergency responders about what kind of cargo they're dealing with.

The lessons that we can learn from the accident history with nuclear cargoes are not encouraging. There have only been a very small number of shipments in the United States over the last 10 years or so, and there have only been a very small number of accidents. Not a single one of these accidents has ever tested a truck cask or a rail cask to any kind of capacity at all. In other words, there is no way of understanding from the accident history whether a cask can withstand a serious accident. We do know that the English authorities have drop-tested their casks. Some of them have been found to crack and have been found to be defective.

The only serious accident we've had with nuclear materials in the U.S. was in 1977 in Rockingham, North Carolina. Subsequent study from the National Transportation Safety Board showed that the fire that ensued in that accident contributed to a huge amount of chaos. In fact, the major lesson to be learned from the historical accidents that we have is that our emergency responders are not likely to be very competent or equipped to take care of a serious accident with nuclear cargoes.

There is also a U.S. Nuclear Regulatory Commission document which I refer to in my longer statement which suggests that a medium-sized State should have training, equipment and personnel costing about $5.1 million in order to be prepared for an accident with radiological cargoes. To my knowledge, no current State is anywhere near being prepared according to those kinds of detailed guidelines. In fact, subsequent post-Bhopal developments that we've had in the United States demonstrate that when you have a good deal of public scrutiny on chemical and other kinds of hazardous cargoes, you can drastically reduce the risk in hazardous materials transportation. Several of the bills that are before you today deal with the question about the "need for shipment." The licensing system that the Proxmire bill, for example, would call for, I think frankly can best be applied by amending the Hazardous Materials Transportation Act rather than the Atomic Energy Act.

But in general, it should be known that a licensing system for very hazardous cargoes is not an unknown situation in the United States. The U.S. Department of Transportation operates an exemption system for, for example, nitrogen tetraoxide rocket fuel shipments, which was previously called a "permit" system. So it should not be seen as a kind of extraordinary, egregious variance from normal procedure to have some kind of a specialized license procedure for extremely dangerous cargoes.

We basically support most of the thrust of the three bills that are before you today, although we suggest that many of them could be blended together. Especially if we go ahead with some kind of assessment of the safest routes, it seems that—for example, in S. 1008—there should be an explicit requirement that the shippers of these cargoes should use the safest routes, as opposed to simply studying the safest routes, as the current bills seem to call for.

Finally, we would urge Congress to require the Department of Energy to implement the ALARA concept to protect rail workers and other workers in the transportation of really very dangerous cargoes. ALARA "as low as reasonably achievable", is the radiological protection system that has been applied in fixed nuclear facilities such as power plants, but has never been applied to transportation. We would urge Congress to push that ahead, with legislation, if necessary.

Thank you, Mr. Chairman.

Senator **Breaux**. I thank all the members of the panel for being with us this afternoon.

Let me ask you the question that I asked some of the witnesses this morning. I asked a question as to whether we are looking at something that is more of a human factor problem versus a technological problem with regard to the transportation of hazardous waste. Do you have any thoughts on which is the greater problem, if there is any distinction between the two?

Mr. **Millar**. You know, in the chemical safety area in general, at meetings where people are discussing loss prevention or chemical risk reduction, many of the people who are safety experts have a concept that there is no such thing as a purely human error, that a human error is a management error. A human error is a failure to consider what somebody could do wrong that could thereby cause a serious accident. And the effort is therefore put by the safety experts to finding ways to make that error impossible. You know, you do various kinds of things that can—for example, you can provide various kinds of double locks or various kinds of safety mechanisms that can make the kind of human error impossible. It seems to me that we ought not to accept the notion that there's just some kind of inept workers out there that we have to deal with. The fact is, we need a better management system, and one of the clear management systems would be the avoidance of densely populated areas and other high hazard areas that could make the consequences of an accident very severe.

Senator **Breaux**. Anybody else?

Ms. Kassen.

Ms. **Kassen**. I would second the notion that human error is the primary weak link. There is a statement in the environmental assessments that the Department of Energy produced last year which indicates that when they factored human error into their risk assessment, they found no significant change, and that's something that EDF thinks is not accurate. There is a study which is cited extensively in my written testimony that talks about human error in cask manufacture and maintenance. As a practical matter, there are a whole series of incidents where inspectors were not checking vents at the beginning of a trip but only at the end of a shipment, and the vents had popped open enroute. There's just a litany of problems that even an effective management system could not completely override; we believe that human error is something which needs to be factored into any risk assessment. As a practical matter, you can manipulate all kinds of statistics—you heard this morning that the chances of a radioactive release are something like one in 80 million miles but those kinds of risk analyses, if done on something like a Three Mile Island or Chernobyl, are going to show that the chances of that kind of an accident are in the millions of years when, in fact, they happened after only a couple hundred years of reactor operations.

Senator **Breaux**. You said that we have been kind of—I guess the word you used was "lucky"—with regard to the situation in the United States. Is that comparable to the situation worldwide, too? Do we have a pretty good record worldwide with regard to transportation of radioactive waste?

Ms. **Kassen**. It's a question that I can't answer. What I can say is that there are two dry casks licensed for at-reactor storage in this country, and there are 2,000 in Europe. So it may be that—I don't know what the statistics are on the number of shipments going on in Europe.

Senator **Breaux**. Congressman Rowland, when he testified before the committee this morning, talked about the need for changing the law, that the situation that he found in Connecticut was intolerable, that it had been drawn out for far too long, that we just could not get any kind of a decision. New York says, don't transport waste through the city; do it through Connecticut, in effect, and Connecticut says, we don't want it, either. And he says that the situation and the lineup that we have right now is just so intolerable that we need some changes in the law.

Mr. Bishop, do you have an opinion on that?

Mr. **Bishop**. Yes, sir, I do. We've been involved in that lawsuit as well, and I have the same basic judgment that the Congressman expressed.

I think the process can be strengthened. I think obviously that due process guarantees have to be ensured. I think the provisions right now that call for inconsistency rulings by the Department of Transportation, which are advisory only, do not work well. They send a signal but they don't send a binding signal. For instance, they found that a fee provision of a Vermont regulation was inconsistent with the Hazardous Materials Transportation Act and the Department of Transportation regulations. Subsequently, Illinois, Pennsylvania and Colorado enacted different varieties but basically established fee mechanisms for those States as well, so the process is not an efficient one.

Senator **Breaux**. Ms. Kassen, do you have an opinion on that?

Ms. **Kassen**. Well, first of all, I'd like to point out that the Department of Transportation recently found that the Illinois fee system was not inconsistent with the Hazardous Materials Transportation Act, and the Nuclear Regulatory Commission has said about the Illinois program that it is a model program and one that they encourage other States to look at. So there may have been a change over time in what the Department of Transportation has been thinking about fee systems.

With regard to the situation in New York, I think that the system could be made more effective. We obviously believe that the best way to determine routes is to do a national comprehensive safety analysis that looks at all of the possibilities, and that if that were done—it's a suggestion at the end of Senator Wirth's bill—that that might solve some of the local problems and some of the local concerns.

Senator **Breaux**. Do you think a State ought to be able to enact legislation which would arbitrarily prohibit the transportation of radioactive wastes through their State borders?

Ms. **Kassen**. Obviously, I don't think that the States should be allowed arbitrarily to do anything. However, you look at what happened in Colorado where the State recently went through a designation of route rulemaking hearings. They chose to bar transportation of nuclear materials through the Mousetrap, which is where Denver had its infamous torpedo spill a couple of years ago, and also over I-70 West, which goes over several mountain passes, through several tunnels, and has been judged to have 34 times the number of accidents that an average highway segment does. That's something that nobody challenged, and as a practical matter, because I–70 is a part of the national highway system as far as the Department of Transportation was concerned, it was—under their regulation HM–164—fair game. I think that it was appropriate and prudent for the State of Colorado to take that portion of the Interstate highway system off the map because it is too dangerous.

So I think there is definitely a place for States and localities to be involved in the process rather than just having the Department of Transportation say, fine, the entire Interstate system is safe. That's not true.

Senator **Breaux**. Mr. Bishop, would you agree with the suggestion by some that the Congress ought to become more involved in setting standards for the human factor in such areas as the people who carry hazardous wastes, drivers of trucks, or train engineers—should they be set to a higher standard than that which would be required for, say, the transportation of anything else that is nonradioactive or nonhazardous? Should it be a higher standard for someone who is going to drive an 18-wheeler with radioactive waste as opposed to someone who is driving an 18-wheeler loaded with bananas, for instance?

Mr. **Bishop**. Senator, I don't think legislation is required at all. I think the Department of Transportation has that mission very clearly from the Congress in the Hazardous Materials Transportation Act. They have the ability to deal with those issues.

Senator **Breaux**. The question is, do you think the way in which they're dealing with it is satisfactory or not?

Mr. **Bishop**. I'm encouraged by their advance notice of proposed rulemaking dealing with driver qualification necessary for hazardous materials transport. I think that's a positive step forward. I think they are sensitive to those same issues that you and I are.

Senator **Breaux**. Ms. Kassen?

Ms. **Kassen**. As a practical matter, I think that the regulations may be adequate; the problem is that they are not being adequately enforced. And besides that, HM–164 only deals with trucks and not with train operators. As a practical matter, there are no regulations for train operators specific to carrying hazardous or nuclear materials.

Senator **Breaux**. Are you satisfied from your perspective, Ms. Kassen, with the standards that are being used for the carrying of the Class A waste as opposed to Class B waste, the type of restrictions or standards that we have for the containers that are being used?

Ms. **Kassen**. For Class A wastes? Or for Class B——

Senator **Breaux**. For low-level versus high-level wastes.

Ms. **Kassen**. Well, with regard to the standards for high-level wastes, the Type B containers, I think there is a critical piece missing from that set of regulations, which is that at this point certification can occur either on the basis of computer simulations or on the basis of physical destructive testing. And we believe quite definitely that you need to have physical destructive testing of casks before they should be certified. The one instance in the last decade where they've actually done physical destructive testing was on the TRUPACT, which is the container that's going to be used to ship plutonium-contaminated waste to the WIPP. That container failed after 35 minutes of fire. This was after DOE had already determined that it would pass the tests; so, we think that it's very important that physical destructive testing be required prior to certification.

Senator BREAUX. Is that not now required?

Ms. KASSEN. No, sir. And no cask on the road today has ever been tested to destruction. No cask has been physically tested at all. The tests that were done in the 1970's were done with casks that are no longer on the road, that were built to different standards.

Senator BREAUX. Mr. Bishop, how do you feel about that?

Mr. BISHOP. No container for any hazardous materials has ever been tested to destruction. I feel that the same engineering disciplines that are used to design casks and develop computer models and that validate with scale-model testing the process that's used for designing bridges and other structures, and airplanes, and that we trust, have proven to be capable in the demonstration of cask design as well. I think the cask testing criteria, which is consistent with the international standards—and I should point out, Senator, that the experience in shipping internationally, where they've done many more shipments than we have in the United States, is the same. There has been no accident that has resulted in release of the contents.

Senator BREAUX. I agree that it's a lot different to crash a plane or to break up a bridge to determine what standard it is that it's going to give at, but isn't it a lot simpler just to do the physical cask test than it is to do any of these other examples that you've cited?

Mr. BISHOP. Ultimately, like most things—I mean, we're talking about training for emergency response and a variety of other matters as well—it ends up ultimately being a question of resources. Do I think that's an appropriate use of resources? No, I don't, Senator. I think the present system has demonstrated that it works well.

Senator BREAUX. Why is it so difficult to test a relatively small container that's going to carry high-level waste for its destructibility factor as opposed to just relying on computer simulation? What's the big deal about trying to break up a cask that's going to carry high-level radioactive waste?

Mr. BISHOP. I think one of the questions that is unanswered, at least in my mind, is at what point is enough enough? Right now they're tested to certain criteria; by computer models, scale-model tests——

Senator BREAUX. The problem is, we're not testing it at all with regard to actual physical testing. It's not a question of how much is enough, it's a question of whether anything is enough because we're not doing anything with regard to a physical test, as I understand it. Is that correct?

Mr. BISHOP. Yes, sir. All it would cost is a few million dollars for every cask design that exists——

Senator BREAUX. Well, we crash cars into concrete walls to determine whether a seat belt is going to work or not. Is it not sufficient of a need, from a potential danger standpoint, to test that cask that is going to carry high-level waste?

Mr. **Bishop**. I think if the responsible Federal agencies determine that that's appropriate, I would certainly acquiesce.

Senator **Breaux**. Your organization has no objection to that?

Mr. **Bishop**. Only that of cost and the fact that it's not needed.

Senator **Breaux**. Well, measure it against the cost of a potential disaster of a cask that fails. What is the cost factor that you would have to factor into it? How do you determine that it's too expensive to test something like that?

Mr. **Bishop**. Sir, I guess the question ultimately comes down to the fact that I am confident that the present system, the engineering standards, the computer model verification provide a sound product.

Senator **Breaux**. You are the one who raised the cost factor. I guess what I'm trying to pursue is, how do you measure the cost? What do you measure it against to determine that it's not cost-effective?

Mr. **Bishop**. We had some experts previously available, but my estimate of an instrumented test—it's in the millions of dollars.

Senator **Breaux**. And what would be the cost of an accident that you would measure that million-dollar cost against? What's the potential cost of an accident where a cask fails? You have to measure it against something, and I'm just trying to get a comparison of what you measure it against.

Mr. **Bishop**. I believe that the 1982 Sandia Laboratory study provides a good experience base in that they purposely simulated a sabotage attack. Not just crashing this into a wall or a bridge, but an explosive attack. And the result was that—their determination that Mr. Millar talked about earlier, the earlier 1979 study, that was grossly in error; that rather than .7 percent of the contents being released, it would be .0006 percent.

Senator **Breaux**. When you go back to the basic logic, and the computer tells you from some program that the likelihood of this breaking up is such and such, wouldn't you feel a little bit better if someone would go out and try it and see what happens to it?

Mr. **Bishop**. Maybe my problem is engineering discipline. I don't feel that same kind of need to demonstrate that in fact things work the way things are supposed to work and they are designed to work. Yes, it could certainly be done. The DOE is evaluating the value from a public relations point of view of doing that as part of the Nuclear Waste Policy Act, but has determined that that is an appropriate decision to be made at some other point in the future.

Senator **Breaux**. Well, I hope we don't use public relations as a standard for determining whether we test or not.

Mr. **Bishop**. Yes, sir. I do, too.

Senator **Breaux**. Okay. I thank the panel very much. I appreciate your being with us.

We have one final group consisting of local representatives. We'd like to welcome up at this time the Honorable Ron Lurie, Councilman of the City of Las Vegas, and Mr. Dennis Bechtel, who is the Planning Coordinator, also from Nevada; he is from Clark County, Las Vegas.

We thank you. We are pleased that you've been able to stay with us, and we apologize for your being last, but that doesn't mean last in importance. We're glad to have you here.

I would bet that one of you is not Dennis or Ron.

STATEMENT OF ELIZABETH MACIAS, DEVELOPMENT OFFICER, CITY OF LAS VEGAS, NV

Ms. MACIAS. Mr. Chairman, my name is Liz Macias. I'm representing Mayor Ron Lurie, who is unable to be here today.

I have a brief statement of his that I'd like to read.

Mr. Chairman, members of the subcommittee, I would like to thank you for this opportunity to express the City of Las Vegas' concerns regarding the transport of high-level nuclear waste. We commend the subcommittee for reviewing nuclear waste transportation at a time when citizens are demanding public policy that ensures the safest possible transport of these dangerous materials.

Las Vegas, the largest city in Nevada, serves as the center of the southern Nevada transportation network. Naturally, the transportation of hazardous materials is a major concern of our city. It is well known that elected city officials and administrators have been and will continue to be opposed to the transportation, transfer or storage of high-level nuclear waste and other hazardous materials in and throughout the City of Las Vegas.

This issue has been of growing concern due to the scheduled commencement in 1990 of shipments of Department of Energy-generated waste from the Nevada Test Site to the Waste Isolation Pilot Plant in Carlsbad, New Mexico. The plan is to truck six to ten shipments per year to the New Mexico facility. The route which has been tentatively selected uses Highway 95, through the heart of downtown Las Vegas, towards Boulder City and continues south on 95 to Needles, California.

While six to ten shipments per year does not seem considerable, the city is concerned that once these highways become targeted for such transport, a precedent will be established. Then, if Yucca Mountain does become the Nation's first nuclear waste repository, the tendency will be to send hundreds of shipments along the same route.

DOE's position on the transportation of nuclear waste states that "the overall goal is to reduce risk by reducing the amount of time the radioactive material is in transit." With the vast majority of nuclear waste being produced in the eastern United States, how does DOE justify shipping nuclear waste thousands of miles westward, if in fact their goal is to reduce travel time? Apparently, the Department of Energy gives little credence to transportation being a significant factor in site selection.

The only criteria that the DOE used to designate Waste Isolation Pilot Plant shipment routes were four-lane highways and shortest route. Using these factors, the Department of Energy originally scheduled their shipments to cross Hoover Dam, until they were finally prevailed upon to reconsider. The city is concerned that no analysis of the following factors has been considered: population characteristics; accident rates; high traffic and accident conditions; road conditions, such as pavement, shoulders and bridges; areas of extreme sensitivity, such as schools and hospitals; rail conditions, such as terrain and proximity to population centers; emergency response capabilities of communities bordering transportation corridors, and economic impact upon communities bordering shipping corridors.

In addition to the safety of our citizens, another major concern present is the impact of such shipments to our basic economy, tourism. Whether or not Yucca Mountain is selected as a site for the Nation's western repository, any transport of high-level nuclear waste through the city could adversely impact a person or corporation's decision to visit or site a facility in Las Vegas. In this case, the perception of danger is sufficient to damage both the city's tourism business and thwart economic diversification efforts.

The fear of a potential nuclear accident occurring along the proposed waste shipping routes translates into lost economic opportunities for the city and results in significant social impact as well for the community. The out-migration of residents, reduced property values and negative impact on the tourist industry affect not only the city's economy, but the entire State as well. The tax revenues generated by the tourism industry in Las Vegas provide a significant portion of the revenues collected by the entire State.

In addition, economic diversification efforts have included promoting Las Vegas as an ideal distribution center. Excellent highway and rail access to the western markets, coupled with the lack of a State inventory tax, have made Las Vegas a regional distribution center for several retail and wholesale operators. This growing business potential would be seriously impaired with the mere perception of danger associated with nuclear waste shipments.

The city feels that economic factors such as those I have mentioned must also be addressed and studied in detail before routes may be designated.

With regard to the three bills, S. 833 proposes that no high-level radioactive waste or spent nuclear fuel shall be transported by or for DOE to any temporary or permanent facility operated by or for DOE through an area designated as an urbanized area by the Bureau of Census, if the local government can identify a safer route. The city is in full support of this bill.

S. 1008 provides for application criteria and licensing procedures for any persons transporting high-level nuclear waste. The city would suggest that in addition to the seven items required for application, a provision be inserted that would require a shipper to notify the local government prior to each shipment, the date and time that such shipment will be traveling through their jurisdiction. In addition to receiving a notice that an application has been filed with the Commission, the shipper should also provide the local government with the same documentation contained in the application, and the local government should also be permitted to provide comments to the Commission pertaining to the application prior to the license being issued.

The city objects to Section 314, Exemption from Transportation Restrictions, which provides for an exemption to the procedures it has established in Sections 312 and 313. Safety should not be compromised. The city suggests that language be included that would ensure that a crisis at one location would not merely be transported to another without some stringent guidelines that would protect the safety of those receiving such a shipment, and that if evidence that such guidelines were not adhered to were shown, the local government could refuse such a shipment.

S. 1269 provides for grants to States and political subdivisions to designate routes and parking sites and to provide for the enforcement of use of designated routes for the transport of hazardous materials. The bill also provides for grants to States and political subdivisions to assist in training personnel in emergency response. These grants are to be capped at 75 percent. The city feels that these programs should receive 100 percent funding.

The city supports a continuing hazardous materials flow study. Under Section 10, the analysis of the shipment of nuclear materials should contain an analysis of economic impact associated with the transportation of nuclear materials, in addition to the risks to health, safety and the environment. Again, the city stresses that public perception be considered as an adverse factor related to such shipments.

The city feels that all State and local governments should have the right and be provided with the means to conduct their own independent studies for determining the safest routes through their communities. These independent findings must reflect a positive outcome rather than portray a situation that at best can be typified as potentially adverse. Funding for these studies should be provided in full at the Federal level. The selection of a designated route would be a collective effort, and the State and local governments should be permitted to provide input for every decision that affects them.

Mr. Chairman, members of the subcommittee, I would like to thank you for allowing the City of Las Vegas to present its views today. With Waste Isolation Pilot Plant shipments due to commence in 1990, the city is very concerned that these transportation issues be resolved and an analysis be conducted as soon as possible. Today's hearings are an indication that Congress recognizes that State and local government concerns are integral in determining the safest possible route for the shipment of nuclear waste across the Nation's highways.

Thank you.

Senator **Breaux**. Thank you very much.

Mr. Bechtel, nice to have you.

STATEMENT OF DENNIS BECHTEL, PLANNING COORDINATOR, CLARK COUNTY, LAS VEGAS, NV

Mr. **Bechtel**. My name is Dennis Bechtel. I am a Planning Coordinator for the Clark County Department of Comprehensive Planning in Las Vegas, Nevada. I'd like to thank the subcommittee for the opportunity to testify this afternoon.

I want to offer to the subcommittee commentary to explain the concerns of the community as potentially greatly affected by the manner in which nuclear waste is transported. I want to note that Las Vegas is the core city, and my responsibilities are in the area around Las Vegas and the rest of the county.

I would like to note for the record that Commissioner Thalia Dondero of the Clark County Commission, a member of the National Association of Counties and the State of Nevada Commission on Nuclear Projects, had wished to be here today but had a prior commitment. My presence here today is to confirm her and the rest of the Clark County Commission's concern about the nuclear waste repository program in general, and specifically with reference to the transport of nuclear waste.

As a general comment, I would like to say that the transportation of high-level radioactive waste and spent fuel should be given greater emphasis than it has heretofore in the repository program. We are pleased to see the introduction of a number of bills by the Senate specifically addressing the transportation of the material. We are also pleased that this hearing is being held today because it provides evidence that Congress is beginning to realize the importance of transportation of nuclear wastes to the public.

Once the repository is selected and once the shipments begin to be transported, these shipments have the potential of affecting a large number of individuals and communities throughout the United States. They should be conducted in a manner, therefore, that is very sensitive to the potential dangers to the public in the shipment of a highly toxic material.

Although my comments today reflect the concerns as perceived by Clark County government, they could as well be applied to many communities throughout the country. To place my comments in context—and I'd like to refer you to two attachments that I submitted with my testimony; attachment 1 is a map of Nevada, and it shows the routing and it shows the location of Clark County with regard to the proposed Yucca Mountain site, which is just on the western end of the Nevada Test Site, there.

Attachment 2 is the—both of these attachments, by the way, are out of the DOE environmental assessment—attachment 2 notes several scenarios being considered by DOE and notes 100 percent truck and 100 percent rail options, with and without MRS. And if you look under "Highway Route," I-15 South, I-15 North, U.S. 93 North, those are shipments that could potentially affect the Las Vegas area. So I guess you can see by the number of shipments that we are concerned.

I would like to describe Clark County and its relationship to the proposed Yucca Mountain repository a little further. Clark County's closest community to the site, Indian Springs, is approximately 20 miles from Yucca Mountain. The city of Las Vegas, a major population area with 60 percent of Nevada's population with some 600,000 people, a population that will grow to well over a million by the year 2000, just about the time of the opening of the repository, is about 100 miles from the proposed repository.

I have organized my comments by making a statement describing DOE policy on transportation, then relating Clark County's concerns, followed by our recommendations.

The Department of Energy is utilizing Department of Transportation regulations, specifically as exemplified in HM-164, in the regulation of nuclear waste shipments. HM-164 basically requires that shipments of highway-controlled materials utilize Interstate highways or State-designated routes. State-designated routes, which are to be made in consultation with local communities, must pass the test of not increasing the distance that the shipments must travel to the final point of deposition. As someone else indicated, this is concerned strictly with truck transport.

Our concerns are that a strict adherence to DOT regulations will result in numerous shipments of nuclear waste being transported through downtown Las Vegas, the most densely trafficked are in our city. But this is one option being considered that can readily be seen by the transportation analysis provided in DOE's final environmental assessment, the two attachments that I mentioned previously. The magnitude of the concern can be seen in the number of potential shipments that could traverse our area. While numerous communities throughout the U.S. have beltways to enable shipments to comply with the DOT regulations and avoid densely-populated areas, this is not the case with communities like Las Vegas with only a single Interstate and no alternatives that would avoid the densely-populated, densely-trafficked areas. In a community where tourism is so important, you can readily see why the transport of nuclear material would cause us to have problems with the proposed utilization of DOT regulations.

We would recommend that—DOE is currently operating under the premise that the casks used to transport nuclear waste will not release hazardous material to the environment, and consequently not endanger the public. They are, therefore, not concerned about transport through an urban area because they don't feel that there will be a release of dangerous radioactive material. They point to their admittedly commendable record of transport to date. The increased number of casks and shipments, however, especially through heavily traveled urban areas, increases the potential for accidents and releases of material. DOE should, therefore, avoid Interstates traversing urbanized areas, especially those in communities such as Las Vegas where there is no other option. Although circumventing the Las Vegas urban area may increase the total distance of the shipments, the alternative—with its potential for real or perceived damage to the public—is not acceptable.

We empathize with DOE's problem. We do feel, however, that there are unique circumstances that should be considered in individual communities. In this regard, Clark County is highly supportive of S. 833, the Nuclear Waste Transportation Prohibition Through Urbanized Areas Act of 1987, since we understand it would provide local communities with the opportunity to designate routes that would avoid urbanized areas and a potential for accidents and danger to the public.

Likewise, we support the creation of the Hazardous Materials Transportation Safety Act Amendments of 1987, amendments to related transportation legislation noted in S. 1269.

The amendment to Title IV of the Surface Transportation Act of 1982, Grants for Transportation Routes and Parking, is especially important. A grant to consider an area for parking space, or "safe haven," as it has been known in the industry, is especially innovative and we think it should be implemented.

The fact that the bill comprehensively considers hazardous material is also commendable.

S. 1008, which inserts a chapter into the Atomic Energy Act relative to licensing of shipments, we also feel should be supported. However, we have some concern about the last provision, Exemptions from Transportation Restrictions, which note that "compelling reasons of public health and safety or national security which necessitate the immediate transport of the waste to another site or facility"—while there are obviously emergencies where this quick action would be required, we hope that that doesn't dilute the intent of that Senate bill.

The second item we have concern about, DOE is concerned with strictly adhering to DOT criteria. It apparently does not consider the implications of all its routing decisions.

Our concern is related in part to the situation in the previous example, DOE's apparent lack of sensitivity in routing decisions. On numerous occasions, the last being the final environmental assessment, for which I would again refer you to attachments 1 and 2, DOE has noted that it intends to use U.S. Route 93, which is the route over Hoover Dam, to transport shipments of nuclear waste. The road is winding, treacherous, and the scene of numerous accidents involving trucks and cars each year. Likewise, it is a tourist area with thousands of visitors annually, often creating conditions for an accident. A number of truck accidents have come close to overtopping the dam and falling into the Colorado River in the past. In addition to the potential implications from an accident, the Colorado River is the water supply for millions of people in southern California, Nevada and Arizona, as well as a river subject to the conditions of an international treaty with Mexico.

We would recommend that Hoover Dam should not be used as a transport route for nuclear materials. Likewise, similar areas of sensitivity—one example that was cited earlier being the Eisenhower Tunnel in Colorado—in other areas of the country should be similarly avoided. Routing often cannot be reduced to a simple formula, such as the regulations prescribed by DOT. Routing decisions should take into consideration the unique circumstances present in individual areas of the country. This will undoubtedly complicate the selection of a route for the transport of radioactive material; however, we feel it is the only way to minimize risk to the public.

The third item I have, Defense and civilian programs for the transport of nuclear waste are currently operating independently. Defense shipments to the Waste Isolation Pilot Project, WIPP, in New Mexico from facilities such as Hanford, Rocky Mountain Arsenal and Nevada Test Site will begin in 1989. These, we understand, are unclassified shipment, and therefore communities would be eligible to be notified of their transport.

As with the proposed civilian shipments, DOE is considering using DOT routing regulations that would transport the waste on I-15 through Las Vegas and over Hoover Dam. Our concern, then, is that the Defense shipments, although considered by DOE as an entirely different program, will create precedents of routing that will then be employed in the later civilian nuclear waste program.

We have concerns also, similar to the City of Las Vegas, that proper funding is available for equipment and training for local governments. And I think maybe we feel also that maybe the funding level provided in the act is too low.

My last comment has to do with the Nuclear Waste Policy Act, which is explicit in requiring DOE to interact with States and Indian tribes. The NWPA has minimal provisions, however, requiring interaction with local entities. Our concern is that local communities will not have an opportunity to work with DOE to decide routing questions.

Because the results of this program would ultimately impact local communities, local communities should therefore be very much involved in the decisions being made with regard to the transportation issues of this program. Local communities can be of benefit to the DOE in selecting the safest routes. Ignoring local communities may cause further problems in implementing the program.

To conclude, I want to thank the subcommittee for the opportunity to present the concerns of the local communities that could be substantially impacted by the transport of nuclear material. We should reemphasize for the record that transportation of nuclear materials is of extreme importance to the citizens and elected officials of Clark County. We should also note that, in part for transportation reasons, the county has come out in opposition to the project.

In addition to the important health and safety concerns, we are of course concerned that the program will affect our major source of income, which is tourism. We would caution the committee and DOE that such decisions on transportation should not be considered lightly. They have the potential to greatly influence the livelihood of local communities.

With that I will conclude. I thank you again, and I would be willing to answer any questions you might have.

Senator **Breaux**. Thank you very much, Mr. Bechtel and Ms. Macias.

I want to recognize first your Senator from Nevada who has been very active and very concerned with trying to help set up these hearings and is responsible for your being here, and we are delighted to have him back this afternoon. Senator Reid?

Senator **Reid**. Thank you very much, Mr. Chairman. I appreciate your attentiveness. You have been a real marathoner. You've stuck through all these hearings day after day, and we all admire you for that.

I would point out to you, Mr. Chairman, the testimony of Ms. Macias indicates that Ron Lurie is unable to be here. The reason, really, that he was unable to be is that he was elected Mayor of the City of Las Vegas last night.

Senator **Breaux**. Last night?

Ms. **Macias**. Last night.

Senator **Reid**. In a very hotly-contested election.

Senator **Breaux**. Did you vote?

Ms. **Macias**. Oh, I voted, yes. Last week.

Senator **Reid**. So Ron Lurie is now the new Mayor of Las Vegas, the first new mayor in 12 years. So we're happy that he isn't here because I'm sure he's resting and doing other things. He had a long, hard campaign.

Mr. Chairman, I have a couple of comments. I don't know if the panel wants to respond, or even if it's necessary, but I do want to bring this to your attention.

We hear a lot, and we have testimony here from the largest metropolitan area in Nevada, and rightly we should, but a city like Las Vegas and a county like Clark have the resources to send their people to Washington, to prepare their testimony, to advise those people that run the city and the county. One of the areas we haven't heard from, because they don't have anyone representing them, is rural America; rural Nevada. Hazardous waste shipments travel through these communities just like they travel through the large communities. I was in rural Nevada several months ago and I was talking to a policeman. He indicated to me that they get notices all the time of hazardous materials coming through the community, and he paraphrased, not knowing that he did, our colleague from Washington, Brock Adams, who said that he can't even pronounce the names of the stuff they're hauling through America, let alone know what's going to happen when there's an accident.

That's a concern that I have also, and I think it's important that we point out that the fact that these rural areas are notified that something is coming through means absolutely nothing. Some of these police forces have five and six people. They can't do anything about it except worry, and that's basically what my friend said; when they get one of these notices, which happens quite often, all they do is worry about it because they couldn't do anything to stop it. If there was an accident, they wouldn't know what to do other than to run or get in the car and go real fast away from it.

Pointed out in Ms. Macias testimony, is a recognition of that, and I appreciated that, the fact that you are aware that there is a problem and that there should be some notification by the shipper. We do now have notification; the Department of Transportation does create some notification, but it's not enforced. And frankly, it doesn't do much good now except worry the people that do get the notice.

I would point out another thing, Mr. Chairman, that I think is real important that we should talk about at this committee because it again points out an overall problem. A person coming from the Phoenix area, a very large metropolitan area, to Las Vegas would pass over Hoover Dam. That's a normal way to come, "over the Dam," as we call it. Congress authorized some time ago monies—they haven't been appropriated, but they've been authorized—monies to build a new bridge in order to avoid Hoover Dam, because it is a disaster in the making. It's clearly a dangerous spot that some terrorist could drop something off the side of that dam, and all you would have to do is drive by it or walk by it. That dam is responsible for water for much of the population of this country because it goes down through California, and now the Arizona water project—also, the electricity for large parts of southern California. There are no restrictions on shipments coming across that dam of any kind. I think there should be. We talk in generalities and don't talk specifics. I again congratulate you for bringing out the testimony regarding the dam. We really need to do something about that. We need to appropriate those monies so that there can be a safe way of avoiding the dam. There isn't now.

I commend the County Commissioners for sending you back here, Mr. Bechtel, and the City Commissioners for sending you back here, Ms. Macias. Your testimony is very important. And as I indicated earlier, Chairman Breaux has sat through a lot of this testimony that relates to nuclear waste, what we're going to do with it, the regulation of the nuclear power situation generally, and I am sure that there isn't anybody in Congress that knows more about the subject than Chairman Breaux, and I am very happy to be able to serve on his subcommittee.

Senator BREAUX. I want to thank the Senator very much for his work on this project.

Let me ask a couple of questions. I want to also sincerely thank the two witnesses today because they have also been waiting to testify for two days. Particularly if you had a city-wide election yesterday, to be able to be here is a real contribution and we thank you for it.

You pointed out in your testimony, Ms. Macias, about—I guess it was you—on your first page of testimony, the plan to bring material from the Nevada Test Site, which is already there, down to New Mexico for disposal at the Waste Isolation Pilot Plant. And the plan is to bring six to ten shipments per year to the New Mexico facility, but the route which has been tentatively selected uses Highway 95, which runs through the heart of downtown Las Vegas.

Is that a plan that was submitted by the Department of Transportation?

Ms. MACIAS. Let me defer that to Mr. Bechtel.

Mr. BECHTEL. We've got a State and local planning group made up of communities in southern Nevada, and we've worked with the WIPP people, the Joint Integration Office, on the transportation question. And at a meeting in December they provided us with maps that illustrated U.S. 95—as you say, just going right through Las Vegas—and U.S. 93, which would go over Hoover Dam, as being the option they were considering.

Senator BREAUX. I imagine you transport other waste through the city? Toxic waste, chemical waste, that kind of stuff, or flammable cargo and things of that nature? Do they use Route 95 through the city?

Mr. BECHTEL. What we do, the county enacted an ordinance about a year ago attempting to control that. And what we were attempting to do with hazardous materials—we've had cases in the past where we've had joy riders, and they come through Las Vegas and they decide, no matter what they're carrying, to get off the route and drive through Fremont Street downtown. So with hazardous materials, we've attempted to keep them on the Interstates.

Also, we have recommended that 95 be taken in its fullest extent in avoiding Boulder City and Hoover Dam. It's a recommended route; we're not able to say that they can't go over there, but——

Senator BREAUX. The people from New York testified earlier about transporting it through the City of New York, and New York is saying no. It's hard to transport waste from a plant anywhere around New York or Connecticut without running it through some very, very dense population areas.

Isn't there some way they could reroute it around Las Vagas? You've got some very wide-open areas there. Isn't there someplace they could route it that it wouldn't have to go right through the City of Las Vegas?

Mr. **Bechtel**. Yes, there are routes, and we've suggested those to the Joint Integration Office. They promised that they would do a risk analysis of a number of routes including, just for comparative purposes, through Las Vegas and the routes we suggested around Las Vegas. And we were feeling that finally we had had some response from DOE, that they were going to look at some other options. And then I had a meeting in New Mexico in January, and they said—well, I don't want to mention the guy's name, but he said yes, we'll do your route analysis for you, but it probably won't change our mind. We'll probably still go through Las Vegas.

Senator **Breaux**. Are there existing roads that could be improved, perhaps? In some areas we're going to be spending some money on some roads. I think New Mexico is an example, that they're planning on spending a heck of a lot of money to improve a route that takes it away from the population area. Could you do that in Las Vegas to get it outside of the city?

Mr. **Bechtel**. Yes, sir. There are routes available.

Ms. **Macias**. We just want to see that that's recognized, that instead of staying right through the population centers that these issues are addressed and either alternate routes be built, if necessary, in order to avoid a catastrophe or risk to human life.

Senator **Breaux**. Well, you're in a unique location, and Senator Reid has brought that to the attention of the committee. If Yucca Mountain becomes the site, and that hasn't been decided, that's going to be a site where you're going to be receiving a large amount of waste. Even in the absence of that you still have the Nevada Test Site where you're going to have to be transporting waste down to New Mexico for the site down there, so either way there's going to be some waste coming through the southern Nevada area.

Mr. **Bechtel**. Yes, sir.

Senator **Reid**. Mr. Chairman, I think the point you bring up is well taken. You have been to Las Vegas; you know that it is sparsely populated, even though we talk about it as being a metropolitan area. Even today, especially when we're talking about the six to eight loads a year that would be coming from the Test Site to New Mexico, there are lots and lots of different ways that that could be carried that would avoid the major population areas without even doing one thing to the roads.

Mr. **Bechtel**. That's right.

Senator **Breaux**. Well, we thank you. We thank both of you. I plan to visit the Yucca Mountain site to look at it.

Mr. **Bechtel**. That's called "Yucca."

Senator **Breaux**. Well, that's why I need to visit it. I want to learn how to pronounce it.

Number two, to see what it looks like, and I hope to do that shortly, and hope to see you all.

Thank you all very much. I appreciate it very much.

Mr. **Bechtel**. Thank you.

Ms. **Macias**. Thank you.

Senator **Breaux**. With that, that will conclude our hearing on the transportation issue. We have one other hearing on June 18th, and it will be addressing the monitored retrievable storage, the MRS program, under the jurisdiction of the subcommittee.

With that, the subcommittee will stand adjourned until further call of the Chair.

[Whereupon, at 3:23 p.m., the subcommittee was recessed.]

[Statements submitted for the record follow:]

Testimony of Sen. William Proxmire submitted to the Senate Committee on Environment and Public Works

Mr. Chairman and members of the Committee, thank you for giving me the opportunity to submit testimony on the subject of nuclear materials transportation. The Environment and Public Works Committee in its reauthorization of the Price-Anderson Act has the opportunity to create an effective federal-state scheme of transportation regulation in an increasingly important area. The current federal system of nuclear transportation doesn't measure up, yet the Hazardous Materials Transportation Act(HMTA) and Atomic Energy Act preempt states from acting themselves. As a result, there is often no regulation at all.

Why am I concerned with this subject? Wisconsin has had unique exposure to nuclear waste transportation. Fully 45% of all the nuclear waste transported by truck in the United States moved through Wisconsin. The state also hosted the largest rail shipments by volume yet sent, the 30 shipments of spent fuel which travelled from Northern States Power in Monticello, Minnesota to interim storage in Morris, Illinois. Wisconsin's experience with these recently completed rail shipments points out the need for new legislation on both the state and federal level.

Although Wisconsin wanted to impose a limited list of health, safety and environmental protection measures on the utility and its carrier, a federal court ruled that the HMTA and the Atomic Energy Act effectively eliminated a role for the state.

This restriction makes no sense. States, not federal agencies, bear the emergency response burden should accidents occur. And states traditionally are responsible for local transportation health and safety regulation under their police powers. In contrast, the Federal Rail Administration has only a few dozen inspectors for all hazardous cargo nationwide and almost no special nuclear safety regulations. Even worse, because the Interstate Commerce Commission denied the rail industry request for a special nuclear waste tariff, railroads seldom use dedicated trains, the simplest safety measure.

While the United States has not yet suffered any major accidents from highly radioactive cargo, this may be more a result of luck and the relatively small volume of shipments than of an inherently safe transportation system. Within the last year a truck with a nuclear cargo fell into the Snake River in Idaho and a train car carrying nuclear waste was briefly lost in Ohio. Even worse, last October there was an apparent attempt to sabotage one of the trains involved in the Wisconsin shipments.

Mr. Chairman, on April 10th I introduced S. 1008, a bill I first offered in 1985, which strengthens federal regulation of highly radioactive nuclear cargoes while providing a greater role for the states. Since this bill amended the Atomic Energy Act it was refered to this committee. However, Senator Hecht and I have modified it to amend the HMTA, currently before the Senate Commerce Committee for reauthorization.

However, even if the Commerce Committee includes nuclear transportation provisions in the HMTA, this committee must amend the Price-Anderson Act before states have all the powers they need to insure that residents are protected in the event of an accident.

S.1008 has two parts. First, the lead agency licenses shipments of high-level nuclear materials or spent fuel after analysis of: relative hazards and risks of alternative routes and transportation modes; evaluation of emergency preparedness; environmental features of the route; factors affecting site cleanup; potential health and safety affects; and need for the shipments.

Second, the bill sets out the rights of states to regulate nuclear shipments. Under its terms, states and Indian tribes can implement requirements for: accident reporting; inspection; fees; advance notice of shipments; cleanup procedures; and other requirements which insure local health, safety and environmental protection. Narrow interpretations of existing Department of Transportation requirements under the HMTA severely limit states from imposing these kinds of regulations. Therefore, the committee must act on this second part of my bill regardless of what the Commerce Committee does with the HMTA.

Mr. Chairman, nuclear shipments will increase as utilities run out of storage space for spent fuel and the Department of Energy begins accepting waste for the Waste Isolation Pilot Project later this year. We can't ignore this problem any longer. I urge the Committee to adopt transportation requirements as part of any bills which amend the Atomic Energy Act.

**STATE OF
WISCONSIN**

RADIOACTIVE WASTE REVIEW BOARD

*620 Tenney Building
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June 16, 1987

The Honorable John Breaux
Chairperson, Subcommittee on Nuclear Regulation
Environment and Public Works Committee
U.S. Senate
Room 458, Dirksen Senate Office Building
Washington, D.C. 20510

Dear Senator Breaux:

The Wisconsin Radioactive Waste Review Board respectfully submits this statement for the record of the subcommittee hearing held June 3 regarding transportation of spent nuclear fuel and high level radioactive waste (HLW).

As a potential host state for the second geologic repository, Wisconsin could be significantly affected by nuclear waste shipments in the future. Wisconsin is also a likely corridor state for shipments to a geologic repository at Hanford or to a monitored retrievable storage facility at Oak Ridge. Wisconsin has also had considerable experience with spent fuel shipments in the recent past. Between 1974 and 1984, there were 474 truck shipments to and from Wisconsin nuclear reactors, representing about 45% of the total off-site truck shipments nationally. The recently completed Monticello-Morris shipping campaign, the largest single rail campaign in the history of the nuclear power industry, involving 30 shipments over a two and one-half year period, traversed western Wisconsin.

The Radioactive Waste Review Board believes that the existing federal regulations governing nuclear waste transportation are deficient in a number of critical areas, including route selection, emergency response planning, and safety and safeguards inspections. State efforts to remedy these deficiencies have been largely preempted not only by statute, but by administrative and judicial interpretations. Wisconsin's experience attempting to regulate spent fuel shipments is described in Attachment #1. We strongly support S. 1008, a bill introduced by Senator William Proxmire, which would strengthen federal regulation and authorize additional regulation by States and Indian tribes, by amending the Price-Anderson Act. We also support legislation to be introduced by Senators Proxmire and Hecht, which would achieve the sameobjectives as S. 1008 by amending the Hazardous Materials Transportation Act, and would additionally require full-scale physical testing of shipping casks prior to certification by the Nuclear Regulatory Commission.

The Radioactive Waste Review Board is also concerned about the U.S. Department of Energy (DOE) HLW transportation planning program. The Nuclear Waste Policy Act of 1982 greatly expanded the Department's HLW transportation responsibilities. To its credit, DOE has demonstrated some willingness to facilitate state, tribe, and public participation in its transportation planning program, for example, in development of the Transportation Institutional Plan published in August, 1986. Much remains to be done, however. Specifically, DOE should formally recognize the right of transportation corridor states to participate in the planning process; provide financial assistance to corridor states from the Nuclear Waste Fund created by the Act; and develop a mutually-acceptable conflict resolution process to address technical disputes between DOE and the states and tribes. Moreover, DOE could eliminate some major state concerns by agreeing to use special trains for all nuclear waste shipments to a repository, and by agreeing to civilian regulation of defense waste shipments.

We appreciate this opportunity to share our nuclear waste transportation concerns with the subcommittee. We believe it is important for the subcommittee and the full Environment and Public Works Committee to be involved with nuclear waste transportation because many of our concerns involve federal-state relations under the Atomic Energy Act, an area in which the committee's jurisdiction is clear. We look forward to working with you on these issues.

Sincerely,

Jim Kleinhans

Jim Kleinhans, Executive Director
Radioactive Waste Review Board

JK:bh

Attachment: Regulation of Spent Nuclear Fuel Shipments

cc: Governor's Office
Wisconsin Congressional Delegation

ATTACHMENT #1

PRESENTED AT WASTE MANAGEMENT '87
MARCH 4, 1987

REGULATION OF SPENT NUCLEAR FUEL SHIPMENTS:

A STATE PERSPECTIVE

Robert J. Halstead
Wisconsin Radioactive Waste Review Board
Carl Sinderbrand
Wisconsin Department of Justice
and
David Woodbury
Wisconsin Department of Natural Resources
Madison, Wisconsin 53702

ABSTRACT

In 1985, the Wisconsin Department of Natural Resources (WDNR) sought to regulate rail shipments of spent nuclear fuel through the state, because federal regulations did not adequately protect the environmentally sensitive corridor along the route of the shipments. A state interagency working group identified five serious deficiencies in the overall federal regulatory scheme: 1) failure to consider the safety or environmental risks associated with selected routes; 2) absence of route-specific emergency response planning; 3) failure of the NRC to regulate the carrier of spent nuclear fuel or consider its safety record; 4) absence of requirements for determination of need for, or the propriety of, specific shipments of spent nuclear fuel; and 5) the lack of any opportunity for meaningful public participation with respect to the decision to transport spent nuclear fuel. Pursuant to Wisconsin's hazardous substance statutes, the WDNR issued an order requiring the utility to file a spill prevention and mitigation plan or cease shipping through Wisconsin. A state trial court judge upheld the utility's challenge to Wisconsin's spill plan requirements, based on federal preemption of state authority. The state is now proposing federal legislation which would require: 1) NRC determination of need prior to approval of offsite shipment of spent fuel by licensees; 2) NRC assessment of the potential environmental impacts of shipments along the proposed route, and a comparative evaluation of alternative modes and routes; and 3) NRC approval of a route-specific emergency response and mitigation plan, including local training and periodic exercises. Additionally, the proposed legislation would authorize States and Indian Tribes to establish regulatory programs providing for permits, inspection, contingency plans for monitoring, containment, cleanup and decontamination, surveillance, enforcement and reasonable fees.

INTRODUCTION

Since the late-1970s, the State of Wisconsin has become increasingly concerned about regulation of spent nuclear fuel shipments. Concern has grown as the number of shipments increased. Between 1974 and 1984, there were 474 truck shipments to and from Wisconsin nuclear reactors, totalling about 186 MTU of spent fuel. The Wisconsin shipments represented about 45% of total off-site truck shipments nationally during the 11 year period.(1) Additionally, the high level waste repository program and data related to truck and rail shipments to a repository, have accentuated public awareness and concern.

There was little official state involvement in spent fuel transportation between 1974 and 1978, during which time Wisconsin Electric Power Company made 238 truck shipments from the Point Beach Nuclear Power Station to Morris, Illinois and West Valley, New York. The state began to focus on transportation issues in early 1979, when Wisconsin learned that the U.S. Department of Energy (DOE) was seriously considering sites in Wisconsin for a geologic repository for spent fuel and high level radioactive waste. Interest in state regulation grew rapidly after the 1979-1980 shipping campaign between Dairyland Power Cooperative's La Crosse reactor and Morris, Illinois. Dairyland's truck shipments were plagued by a number of deficiencies including driver failure to follow designated routes, and excess cask surface contamination.

In response to public concerns, Wisconsin enhanced its emergency response planning. Legislation was introduced in 1979 to establish a comprehensive state regulatory program, although it was not passed. In response to DOE's continued interest in potential repository sites in Wisconsin, the state legislature created the Radioactive Waste Review Board in 1981. The Board identified spent fuel and high level waste transportation as a major state concern.

In 1983, Wisconsin Electric Power Company announced the beginning of 223 truck shipments returning spent fuel to Point Beach from West Valley, New York and Morris, Illinois. Wisconsin initially questioned the route selected for the return shipments, I-94 and U.S. Hwy. 141 through downtown Milwaukee, but did not designate an alternative route. At the request of the Governor's Office however, the State Department of Health and Social Services entered an arrangement with the utility, the U.S. Nuclear Regulatory Commission (NRC) and the State of Illinois providing for inspection of shipping casks prior to entering the state and at Point Beach. The Point Beach routing controversy aroused official concern about the lack of opportunity for state participation in the federal regulatory system, and about the absence of physical testing of spent fuel shipping casks. Since then, state technical reviewers have been highly critical of the NRC's proposed rule modification (10 C.F.R. Part 73) to reduce physical security safeguards requirements for spent fuel shipments.

THE MONTICELLO-MORRIS SHIPPING CAMPAIGN

The announcement in April 1984 that Northern States Power Company (NSP) planned to begin a five-year spent fuel shipping campaign along a route through western Wisconsin opened a watershed period in efforts by the State of Wisconsin to regulate spent fuel transportation. NSP announced its intent to begin shipping 1,058 BWR spent fuel assemblies from its Monticello, Minnesota reactor to the General Electric spent fuel storage facility at Morris, Illinois. The proposed rail shipping campaign was one of the largest in the history of the nuclear power industry, and would involve over 30 special train shipments beginning in November, 1984.(2) Soon after the announcement, state officials began meeting with utility representatives. The state requested that NSP delay the shipments to allow time for evaluation of the proposed and alternative routes, as well as its own emergency preparedness programs. NSP proceeded to plan for the shipments. In September 1984 the state requested that the NRC delay granting a safeguards route approval under 10 C.F.R. Sec. 73.37, but NRC granted the route approval on October 22, 1984. Also in October, the Wisconsin Department of Natural Resources (WDNR) met with utility representatives, and sought a spill prevention and mitigation plan under sec. 144.76(4) Wis. Stats. NSP made its first two shipments in November and December. On January 2, 1985, the WDNR issued an order prohibiting further shipments until the utility had complied with its spill prevention and mitigation planning requirements, and obtained a temporary restraining order from State Circuit Court. Several days later the temporary restraining order was lifted by the court. The state then sought a permanent injunction on further shipments which was denied by the court on June 6, 1985. Concurrently, the Attorney General's Office filed a petition for rulemaking with the NRC in December, 1984, at the request of Wisconsin Governor Anthony Earl.

A state interagency working group expressed five major concerns about the proposed shipments: 1) the environmental sensitivity of the proposed route; 2) unique local conditions affecting emergency response planning; 3) track conditions and the potential for sabotage along the route; 4) the absence of need for the shipments; and 5) the absence of any opportunities for meaningful participation by state and local governments and the general public in the decision to ship spent fuel.

Environmentally Sensitive Route. State officials stressed the environmentally sensitive nature of the route. The Burlington Northern mainline between St. Paul, Minnesota and East Dubuque, Illinois traverses western Wisconsin for a distance of approximately 210 miles after entering the state at Prescott. More than three-quarters of this segment of the route is either within or immediately adjacent to the Mississippi River or its associated wetlands. The route crosses more than 40 rivers and streams, including such major tributaries to the Mississippi as the St. Croix, Chippewa, Buffalo, Trempealeau, Black, Bad Axe, Wisconsin and Platte Rivers. About 190 miles of river shore along the route is included in the Upper Mississippi River National Wildlife Refuge. This important national wildlife refuge includes habitat for more than a dozen federal and state threatened and endangered plant and animal species. The refuge also contains major waterfowl production and migration staging areas.

The Burlington Northern route also passes through four heavily used state parks, which also include habitat for endangered and/or threatened species. The state was particularly concerned that a transportation accident or sabotage incident which resulted in radioactive releases could contaminate irreplaceable environmental resources. Even if there were no releases, however, the use of heavy equipment and large work crews could cause serious environmental damage.

Unique Local Hazards. Most of the route exhibits complicating factors such as proximity to the main river shipping channel or to shallow wetlands; topographic features such as steep slopes and bluffs, often heavily forested; and the absence of highway access. Together these factors would hinder movement of personnel, heavy equipment, and emergency response vehicles to the site of an accident, which would prevent rapid recovery of a derailed cask or casks. High seasonal population density resulting from recreational use of the corridor could complicate evacuation procedures. Even a precautionary evacuation could seriously disrupt river commerce and downstream water use. Certain segments of the route, such as the so-called "Six-mile embankment" in Trempealeau County are particularly vulnerable because of the presence of several of these complicating factors.

Track Conditions. State officials were concerned about extreme variations in track availability and condition, the large number of grade-level crossings and water crossings, and seasonal high water and flood conditions along the route. Many of the potential high-hazard areas are single tracked. Derailments are not uncommon, although statistically the route scores well because of the high traffic density. Several major accidents along other Burlington Northern routes prior to the shipments raised questions about the carrier's operating procedures generally, resulting in an investigation by DOT's Federal Railroad Administration (FRA). Several route segments appeared especially vulnerable to sabotage.

No Need for Shipments. State officials were concerned that the decision to enter this campaign was made solely by NSP, without regulatory oversight and without regard to whether it was necessary. In fact, it was not. At the time shipments began the Monticello reactor had sufficient onsite storage capacity to operate for at least three and possibly six additional years without losing full core reserve capacity. The reactor had been shut down for approximately one year and was not discharging additional spent fuel. Additionally, the utility had made no serious effort to evaluate alternatives to this shipment, such as construction of onsite dry storage facilities.

No Opportunities for Public Input. Neither NRC nor DOT regulations provide any opportunity for participation by state and local officials or members of the general public in the decision to ship spent fuel. Nor is there any forum for state and public involvement in the selection of routes for rail shipments or for the development of route-specific emergency response plans.

EXISTING FEDERAL REGULATIONS

The existing format for the regulation of spent nuclear fuel transportation is embodied in a largely preemptive series of federal programs. Several agencies, including the U.S. Nuclear Regulatory Commission (NRC), the U.S. Department of Transportation (DOT), the Federal Emergency Management Agency (FEMA), and the U.S. Department of Energy (DOE), exercise jurisdiction over various aspects of these shipments. Primary regulatory authority is exercised by NRC and by DOT.(3)

The NRC's jurisdiction over radioactive waste transportation stems from the Atomic Energy Act.[42 U.S.C. seq. 2011 et seq.] Its regulatory authority over transportation is a function of its pervasive authority over the management of radioactive materials, as part of its statutory directive to regulate atomic energy consistent with national security and public health and safety.[42 U.S.C. secs. 2012(d) and 2013(d)]

To date, NRC has taken a fairly passive role in transportation regulations. Although the Atomic Energy Act requires NRC to license the transportation of radioactive materials, including spent nuclear fuel, NRC regulations grant a general license to all licensees and carriers to ship these materials.[10 C.F.R. Part 71, Subpart C]

NRC has developed regulations requiring prior route approvals and certain contingency planning by the shipper.[10 C.F.R. secs. 73.26 and 73.37] Notwithstanding its statutory public safety responsibilities, however, NRC has limited its regulations to protection against sabotage and theft. These are "safeguards," not "safety" regulations, and are administered as such. Moreover, NRC has in the past proposed relaxing these standards as unnecessary to maintain adequate security, wholly ignoring their safety attributes.

Finally, NRC has established radiation standards for transportation systems. These regulations, developed and administered in conjunction with DOT, establish both numerical radiation emission standards and shipping cask design standards.[10 C.F.R. Part 71, - 49 C.F.R. Part 173, Subpart I]

DOT regulates radioactive materials as a component of its pervasive regulation of hazardous materials under the Hazardous Materials Transportation Act (HMTA).[49 U.S.C. Sec. 1801 et seq.] Additionally, DOT operates under a variety of mode-specific statutes. For example, rail transportation, which will likely be the primary shipping mode to a repository, is regulated under the Federal Rail Safety Act.[45 U.S.C. Sec. 421 et seq.] Under this latter act, as well as its highway, barge, and air counterparts, DOT has established a variety of generic requirements relating primarily to equipment, road beds, signals and the like.

The HMTA, like the Atomic Energy Act, is in large measure a safety statute, whose purpose is to reduce "the risks to life and property which are inherent in the transportation of hazardous materials."[49 U.S.C. Sec. 1301] National uniformity in regulation is also a statutory objective, to the extent that it is practical and enhances safety. Under this act, DOT has promulgated a wide variety of requirements specific to radioactive materials, including cask design and emission standards, labeling, placarding, packaging, communications, and maintenance of reports.[49 C.F.R. Part 173, Subpart I; Part 174, Subpart K; And Part 177] Additionally, for highway shipments, DOT has developed specific routing and training requirements.[49 C.F.R. Sec. 177.825 and Part 177, Appendix A]

DEFICIENCIES IN THE FEDERAL REGULATORY SCHEME

The comprehensive regulatory scheme envisioned in the Atomic Energy Act and the HMTA looks much better on paper than in practice. Wisconsin's December 1984 petition for rulemaking to the NRC identified five areas in which the current regulations are seriously deficient, and requested that NRC establish a regulatory process for the evaluation and approval of proposed shipments of irradiated reactor fuel.(4) NRC denied the state's petition in October 1986.(5) The State of Wisconsin believes that NRC's denial of the petition, and numerous factual inaccuracies in the NRC Staff Position Paper on which the denial is based, are further evidence that the State's original contentions were, and are, correct.

No federal agency considers the safety or environmental risks associated with selected routes. Because no federal agency considers risks associated with specific routes, Wisconsin proposed that the U.S. Nuclear Regulatory Commission (NRC) adopt a process which would:

1. Ensure that a proposed route complies with all applicable U.S. Department of Transportation (DOT) safety and routing regulations;

2. Identify route-specific conditions or hazards which create unique risks of accidents, sabotage, or radiological exposure;

3. Evaluate alternative routes and demonstrate that the proposed route has the lowest risk of radiological exposure;

4. Insure that the shipping cask is capable of withstanding all reasonably foreseeable incidents along the proposed route which could interrupt the shipment.

The NRC and DOT do not presently consider route-specific conditions prior to approving routes. DOT, as the NRC denial acknowledges, has "no formal routing rule for rail shipments." This is significant since the two largest shipping campaigns in the history of the nuclear industry (Cooper, Nebraska and Monticello, Minnesota to Morris, Illinois) are presently being shipped by rail, and DOE plans to rely as much as possible on rail for shipments to a monitored retrievable storage (MRS) facility, or a geologic repository in the future.

The DOT trucking regulations for spent fuel (HM-164) require that shipments stay on the Interstate highway system and bypass downtown routes where Interstate system beltways are available, unless states designate (with federal approval) an alternative route. This is not the same as a route-specific risk analysis, and NRC admits that the DOT trucking rules are based on "a generic evaluation of highway routes."

Ironically, the only route-selection criteria which consider the types of concerns identified by the State of Wisconsin are those adopted by DOE as part of the repository site selection guidelines. Under DOE's transportation guideline, the Burlington Northern route would probably be disqualified because of proximity to federal- and state-protected environmental resources. The route's proximity to surface water resources and unique local hazards would be considered potentially adverse conditions. [10 C.F.R. Secs. 960.5-1, 960.5-2-5 and 960.5-2-7]

NRC asserts that route-specific evaluations are not necessary because accident risks are low, based on NUREG-0170.(6) Wisconsin believes that this reliance on this 10-year old document is unacceptable because: 1) it is based on a generic evaluation of route hazards; 2) it assumes the use of shipping casks not in use; 3) it relies on factual assumptions and projections which are not accurate; and 4) although the risk of an accident is low, the consequences are extremely high.

It must also be observed that none of the casks currently in use have actually been tested and the obsolete casks that have been tested were not subjected to the conditions expected in real-world credible worst-case accidents or sabotage incidents.

No federal agency requires adequate planning to protect the public in the event of an accident or other emergency. Because federal regulations do not require a route-specific evaluation, Wisconsin proposed a process under which route-specific conditions and hazards would be identified and emergency response plans, personnel training programs, and exercises and drills would be tailored to specific conditions and hazards along the proposed route.

Federal regulations require comprehensive emergency planning only at fixed facilities. While the present generic emergency response programs are of value, they do not consider the unique problems that the Mississippi River and associated wetlands would present in the event of a derailment or other accident. Recovery of the shipping cask could in and of itself be difficult and cause substantial adverse environmental impacts, regardless of any loss of containment and release of radioactivity.

The NRC does not regulate the carrier of spent nuclear fuel, or consider its safety record. NRC has the authority to require compliance with DOT safety regulations. NRC acknowledges having such authority, but responds that this authority has been delegated to DOT under a 1979 Memorandum of Understanding (MOU) between the two agencies. However, DOT lacks personnel and resources to ensure enforcement of existing general safety regulations. In 1984, DOT's Federal Railroad Administration (FRA) had only 48 inspectors actually assigned to hazardous materials transportation for the entire country. The Office of Technology Assessment (OTA) recently concluded that "federal inspection forces, which have been halved over the past five years while shipments of hazardous materials have been increasing, are now insufficient to ensure adequate inspection levels."(7) FRA relies upon carrier self inspection of bridges and signals. Finally, the NRC's own procedures for safeguards review do not require actual inspection of the entire route. NRC inspectors who conducted the review prior to the Monticello shipments stated that they drove along the route and observed the tracks from their car. This means they saw only a portion of the route and could not observe many potential high-hazard areas which are only visible from the track or from the air.

No federal agency considers the need for, or propriety of, individual shipments of spent nuclear fuel. No federal agency considers the need for the shipments, or the propriety of the shipments in light of potential risks. NRC does not dispute this statement. Instead, it relies on the NUREG-0170 conclusion that the risk of accidents is small, as well as a speculative, undocumented cost-benefit analysis. NRC cites a series of 1982 tests of "simulated fuel casks" subjected to "presumed acts of sabotage."(5) Wisconsin and others reviewed these tests and pointed out numerous deficiencies in the test design and procedures, and the conclusions drawn from them, during the 1984 rulemaking in which NRC proposed reducing security requirements for shipments.(8) It is also noteworthy that NRC has already adopted procedures for determining need for utility access to Federal Interim Storage facilities.[10 C.F.R. Parts 1 and 53] These procedures require an evaluation of whether the utility has adequately considered expansion of on-site storage capacity as an alternative to shipment to an off-site federal facility. Wisconsin has proposed a similar need determination procedure for all off-site shipments.

The public has no opportunity for meaningful participation with respect to the decision to transport spent nuclear fuel. The public has no opportunity for meaningful input into the decision to transport waste, as this decision is wholly within the discretion of the licensee. Wisconsin has suggested providing such opportunity through public hearings prior to each shipping campaign (not each individual shipment, as the NRC and some utility commentors infer). NRC admits that no such opportunity exists at present. NRC argues that it provided sufficient opportunity for public involvement during rulemaking proceedings in 1965, 1971, 1973 and 1975 on generic issues; DOT solicited public comments during generic rulemakings in 1980; and NRC and DOT jointly sponsored a meeting for state and tribal representatives in 1985. While the states appreciate the limited opportunities for public participation in these proceedings, none of the aforementioned events provided any public input regarding specific shipping campaigns or specific routes and are, therefore, of no relevance to the issues raised in the petition.

PREEMPTION OF STATE REGULATORY EFFORTS

In addition to inadequacies in scope, administration, and enforcement of the federal regulatory program, states have been hamstrung by the preemptive effect of the federal program. States have been precluded from engaging in a variety of regulatory programs not only by statute, but by administrative and judicial interpretations.

The Atomic Energy Act is quite clearly preemptive with respect to the radiation safety aspects of nuclear energy generation. Moreover, Section 274(k) makes clear that state and local agencies are not restricted in their authority to "regulate activities for purposes other than protection against radiation hazards." In the landmark *Pacific Gas and Electric Company* case, the court stated:

> Congress has preserved the dual regulation of nuclear-powered electricity generation: the Federal Government maintains complete control of the safety and "nuclear" aspects of energy generation; the States exercise their traditional authority over the need for additional generating capacity, the type of generating facilities to be licensed, land use, ratemaking, and the like.(9)

Thus, State statutes have been upheld which prohibit new nuclear reactors on economic grounds and authorize the award of punitive damages for negligent conduct of NRC licensees,(10) even though these statutes affect the conduct of the NRC licensees.

The preemptive affect of the HMTA has been the subject of much dispute. The HMTA preempts a state or local regulation which is "inconsistent" with the HMTA, but further provides that such a regulation is not preempted if DOT determines that it: 1) affords an equal or greater level of protection to the public; and 2) does not unduly burden commerce.[49 U.S.C. Sec. 1811] Pursuant to this provision, DOT has established both an "inconsistency ruling" and "nonpreemption procedure," under which it will issue advisory, non-binding rulings on the validity of state and local regulations.[49 C.F.R. Part 107, Subpart C] Under this rule, inconsistency is determined by a two-part test: 1) whether compliance with the federal and state requirement is possible; and 2) whether the state regulation constitutes an "obstacle" to accomplishment of the objectives of the HMTA.[49 C.F.R. Sec. 107.209(c)]

To date, DOT has issued 17 inconsistency rulings. Additionally, it has promulgated in 49 C.F.R. Part 177, Appendix A, guidelines on what it considers to be unacceptable state regulations. These rulings are note worthy for their unabashed transfer of responsibilities to the states and restrictions on the states' ability to effectively manage these responsibilities.

In an early consistency ruling, IR-2,(11) DOT without citation or support, established its standard of local responsibility: Protecting against local hazards, emergency preparedness and planning and emergency response. DOT set out for itself a limited role of aiding in local planning, but delegated to the states the sole responsibility for emergency response.

Notwithstanding this weighty charge, DOT has largely rejected efforts by states to effectively manage this responsibility. Conceptually, DOT has concluded that since delay in transportation increases the statistical risk of an accident, any requirement which could create a delay is preempted. Likewise, DOT has also concluded that any state regulation which a shipper might want to avoid influences routing decisions, and is therefore, by definition, a routing regulation preempted by 49 C.F.R. Sec. 177.825. DOT rulings have also placed a high reliance on national uniformity as a primary objective, irrespective of safety implications. Lastly, DOT has consistently refused to weigh the safety implications of the state regulations, but has instead devised a generic, formulaic approach to its rulings.

These themes are best illustrated in DOT's rulings on state permits. In each ruling, DOT has initially stated that a permit requirement in the abstract may be consistent. Yet, each permit it has considered it has held to be preempted. The dubious basis for this preemption was first espoused in IR-2: if the state requires the same information as DOT in its permit application, it is redundant; if it requires additional information, or a different form, it creates additional paperwork and delay. This principle defies DOT's conceptual recognition that a permit might be consistent, in that it necessarily preempts any permit for which an application is required.

DOT's consideration of fee requirements follows a similar pattern. In IR-15,(12) DOT initially observed that a fee to support a "consistent" state program is not inherently preempted. Yet the Vermont fee requirement considered therein was rejected on the grounds that a fee might influence a shipper to select an alternate route and was therefore a preempted routing rule. No consideration was given to the magnitude of the fee, its purpose or its actual effect on routing decisions. In a similar vein, DOT has rejected state requirements for advance notification, shipper contingency planning and seasonal or time-of-day restrictions on specific routes. Indeed, the only state regulatory requirements upheld by DOT prior to 1986 have been selection of alternate routes under DOT guidelines and state inspections and enforcement to implement federal regulatory requirements.(13)

DOT's restrictive perception of state regulatory tools has not been adopted by the courts. For example, in the seminal case of New Hampshire Motor Transport Association v. Flynn,(14) the court rejected the generic approach to inconsistency and instead considered the specific effect of the challenged license and fee requirement. The court concluded that the license and fee requirements served a legitimate purpose and enhanced safety, consistent with the HMTA. It further observed that there are inherent delays associated with licensing and that the delays in the New Hampshire program could be minimized and were overridden by the benefits of the state program.

Subsequent to the Flynn case, DOT has had the opportunity to rule upon the consistency of the fee requirement in the Illinois program. In IR-17,(15) DOT's Office of Hazardous Materials Transportation upheld a $1,000 per cask shipping fee designed to financially support the state's inspection and escort program. In its decision, the DOT concluded that the Illinois' program, which essentially administers and enforces the HMTA program, is fully consistent with HMTA. It further concluded that the state could legitimately charge a fee designed to support that program.

Ironically, the first DOT ruling favorable to states is also the first ruling which is being appealed within DOT. Wisconsin Electric Power Company, DOE and a consortium of electric utilities have appealed IR-17. The appellants' primary argument on appeal is that the transit fee is effectively a routing regulation, in that it influences shippers' route selection decisions. They also raise the concern that other states may also impose fees to support their inspection programs, causing delay and undermining national uniformity. In essence, the appellants argue that a fee is inherently inconsistent with the HMTA, irrespective of its actual purpose or effect, and contrary to the court of appeals' ruling in Flynn. A decision is expected within the next few months.

The interplay between the Atomic Energy Act and HMTA has produced curious results. In State of Wisconsin v Northern States Power, the court essentially held that the statutes, taken together, preclude any state regulation of radioactive waste transportation. Although both acts contemplate, indeed authorize, state regulation, the court concluded that each act effectively takes away what the other act gives.

In State of Wisconsin v. Northern States Power Co., Dane Co. Case No. 85-CV-32 (decided June 6, 1985), the court focused on whether the state's efforts to require emergency planning was preempted under federal law. Specifically, the court considered preemption under the Atomic Energy Act and Hazardous Materials Transportation Act (HMTA).

The court's decision is most interesting to the extent it illustrates the complexities and limitations of an incohesive federal regulatory scheme. Both the Atomic Energy Act and HMTA specifically acknowledge and contemplate some state regulation of the nuclear industry. Yet the court curiously found that read together, the two acts preclude any state regulation. The court stated, "In isolation, there are no doubt hundreds of detailed items not specifically addressed by federal regulations. But, generically, the federal scheme preempts all areas of transportation of hazardous materials." In essence, the court implicitly concluded that each act preempted the areas of legitimate state regulation granted by the other. Similarly, the court seemed to rule that the state regulatory effort was preempted principally under the Atomic Energy Act, yet chastised the state for not seeking a nonpreemption ruling under the HMTA. Both these rulings illustrate the problems inherent in a fragmented regulatory program designed to meet different needs.

This brief review of the NRC-DOT transportation programs and administrative and judicial interpretations illustrates a number of gaps in the regulatory scheme. Although both the Atomic Energy Act and HMTA envision local regulation of those matters not susceptible to uniform national regulation, DOT's emphasis on uniformity and potential delays has proscribed the regulatory tools necessary to administer local control. States have been frustrated in their efforts to require contingency plans to address local hazards, impose time of day, seasonal, and other use restrictions and require information concerning the nature of the cargo.

In order to rectify these limitations, the State of Wisconsin has proposed enhancements to the current regulatory scheme. Three principles dominate this pursuit: (1) Regulatory control over the decision to ship spend fuel; (2) Route-specific analysis and planning to minimize local hazards; and (3) State and local participation in waste transportation decision making.

FEDERAL LEGISLATION PROPOSED BY WISCONSIN

The State of Wisconsin's experience in attempting to regulate shipments of spent nuclear fuel establishes both that there are serious gaps in the existing federal regulatory scheme and that states have generally been frustrated in their efforts to fill the void created by the federal regulations. Wisconsin's experience in petitioning the NRC for rulemaking further underscores the need for changes in federal statutes. During the second session of the 99th Congress, Wisconsin Senator William Proxmire and Representatives David Obey and James Moody introduced bills (S. 1927 and H.R. 3932) to remedy the shortcomings identified by the State.

There are two key provisions in these bills. The first is the requirement that NRC exercise its jurisdiction over all aspects of high level waste transportation through a license requirement. All spent nuclear fuel and high level waste shipments by NRC licensees, including the U.S. Department of Energy operating as a licensee under the Nuclear Waste Policy Act, would require specific license authorization. While DOE shipments under the NWPA would thus be regulated, the need determination required for other shipments would not apply to DOE shipments to a monitored retrievable storage (MRS) facility or to a geological repository. The NRC license could apply to a single shipment, or a series of shipments, as long as the shipping campaign involved similar wastes, the same types of wastes, the same shipping casks of vehicle enroute as long as all shipments occurred within a period of two years. The legislation does provide that shipments could be exempted from the restrictions if the Commission certifies that there are "compelling reasons of public health and safety or national security which necessitate the immediate transportation of the waste to another site or facility."

The NRC licensing process which would be established under the proposed legislation would eliminate the five deficiencies identified by the state in the current federal regulatory system.

1. Route Selection. The legislation provides that a licensee seeking authority to ship spent fuel would have to submit an application to the NRC including a hazard/risk assessment of the transportation corridor assessing physical impacts which might represent a risk to the shipment, and an analysis of alternative routes, including a comparison of risks and hazards. The Commission could also require the licensee to submit an environmental impact report. The NRC, on its part, would be required to complete an environmental assessment prior to granting a license for the shipment. The Commission's environmental assessment would include among other things a comparison of the relevant hazards and risks of alternative routes and modes, a description of environmental features both human and natural along the selected route; a description of the condition of the physical features along the route which might hinder recovery; containment and cleanup of an accident involved in the transportation of wastes; and an evaluation of the environmental and human health effects of the release of high level radioactive waste during transport.

2. Emergency Response and Mitigation Planning. The legislation required an NRC licensee seeking approval of shipments to file as part of its application with the NRC a route specific emergency response and mitigation plan outlining procedures to be taken in the event of release or potential release of radioactive waste including emergency tactics for investigation and monitoring; emergency medical and hospital procedures; containment and decontamination procedures for an accidental release of radioactive waste; decontamination procedures for public and emergency response personnel; cleanup procedures; coordinated response procedures with affected state, tribal and local entities; and resource identification and accessibility. The major difference between this requirement and the emergency response requirements currently in place is that the legislation would require that the plans be route specific rather than generic. Moreover, the proposed legislation would require coordinated federal, state and tribal planning with respect to implementation of the plans required and require the federal agency states, Indian Tribes and affected communities to develop and exercise the emergency response and mitigation plan within 12 months of the date that a license is granted.

3. NRC Responsibility for Transportation Regulation. The legislation requires NRC to determine whether all relevant federal and state requirements have been met before issuing

a license for the proposed shipments. In other words, NRC will be responsible for determining not only whether its own regulations have been met but also whether all relevant regulations imposed by DOT have been met. Further, the legislation allows NRC to impose reasonable and prudent restrictions on the licensee with the goal of minimizing the risk of an incident and/or enhancing the potential for containment and cleanup in the event of an incident. NRC would also be responsible for establishing the financial responsibility of the shipper.

4. *Determination of Need to Ship.* The legislation would require NRC to determine the need for off-site shipment prior to granting a license. Determination of need requirement would not apply to DOE shipments to a monitored retrieval storage (MRS) facility or to a geologic repository. All other proposed shipments would be subject to a determination of need to be conducted according to rules similar to those already adopted by the NRC in 10 C.F.R. Part 53 regarding the determinations required for utility access to federal interim storage facilities. A licensee seeking to ship spent fuel offsite would have to provide detailed information on alternatives considered by the licensee, including expansion of existing storage facilities, construction of new or additional storage facilities, acquisition of modular or mobile storage equipment, transshipment of spent fuel to another plant within the utility system or other such technologies which may be approved by the Commission.

5. *Public Involvement.* The legislation requires an NRC license shipping spent fuel. Thus the normal public participation provisions of NRC licensing proceedings, including public notice, opportunity to comment on draft documents and opportunity to participate in public hearings would be provided for. Further, the legislation would specifically require that licensees consult with affected states and tribes regarding selection of routes prior to submitting an application to the NRC and further would require the licensee to provide evidence that states and affected tribes had been informed of the license application itself. The NRC must also notify the applicant that the application is complete within 30 days of submission. Upon notice of a complete application, the NRC has 90 days to grant or deny a license.

The second major provision of the proposed legislation would be to clarify the role of states and affected Indian Tribes in the regulation of spent nuclear fuel in addition to the federal regulations, particularly with regard to unique local hazards. As the state's experience illustrates, present federal statutes may be interpreted by the courts as preempting reasonable state regulation even where serious deficiencies have been shown to exist in the federal regulations. As the State of Wisconsin experience illustrates, a state court ruled that the federal regulations preempted the state from imposing reasonable regulations, in this case, a spill prevention and mitigation plan, notwithstanding specific statutory authority for state regulation. Moreover, the present challenge by DOE and a group of nuclear utilities to the State of Illinois inspection and escort program in spite of that program's approval by DOT, further illustrates the need for statutory definition of state and tribe jurisdiction.

The legislation therefore would specifically authorize states and Indian Tribes to establish regulations for the following purposes: 1) Implementation of inspection, surveillance, and enforcement; 2) Establishing fees designed to pay the cost of state nuclear safety transportation programs; 3) Accident and incident reporting; 4) Advance notification of shipments; 5) Designation of alternate routes; 6) Identification of safe havens; 7) Operator certification requirements; and 8) Monitoring, containment, cleanup and decontamination procedures.

CONCLUSIONS

The experience of the State of Wisconsin concerning the Monticello-Morris Campaign illustrates the difficulty of state regulation of spent nuclear fuel shipments under the existing legal framework. Wisconsin identified five serious deficiencies in the current federal regulatory scheme. When Wisconsin attempted to fill this regulatory void by applying state statutory requirements, a state trial court ruled that federal regulations preempted the state's spill plan and mitigation requirement. Thus, the existing federal regulatory scheme precludes effective regulation of spent nuclear fuel shipments by States and Indian Tribes. Effective State and Indian Tribe regulation of spent nuclear fuel and high level waste transportation cannot be achieved without changing the existing federal statutes.

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8. JOSEPH STROHL, Letter to Samuel Chilk (NRC), "Wisconsin Radioactive Waste Review Board Comments on Proposed Rule Modification to 10 C.F.R. Part 73," (September 25, 1984).

9. *Pacific Gas and Electric Company v. State Energy Resources Conservation and Development Commission*, 461 U.S. 190, 211-12, 103 S. Ct. 1713, 75 L. Ed. 2d 752 (1983).

10. *Silkwood v. Kerr-McGee Corp.*, 464 U.S. 238, 104 S. Ct. 615, 78 L. Ed. 2d 443 (1984).

11. U.S. DEPARTMENT OF TRANSPORTATION, "Inconsistency Ruling No. IR-2," *Federal Register*, Vol. 44, 75566 (December 20, 1979).

12. U.S. DEPARTMENT OF TRANSPORTATION, "Inconsistency Ruling No. IR-15" *Federal Register*, Vol. 49, 46660 (November 27, 1984).

13. See, e.g., U.S. DEPARTMENT OF TRANSPORTATION, "Inconsistency Ruling No. IR-8," *Federal Register*, Vol. 49, 6637 (November 27, 1984).

14. 751 F. 2d 43 (1st Cir. 1984). *See also National Tank Truck Carriers, Inc. v. City of New York*, 677 F. 2d 270 (2nd Cir. 1982).

15. U.S. DEPARTMENT OF TRANSPORTATION, "Inconsistency Ruling No. IR-17," *Federal Register*, Vol. 51, 20926 (June 9, 1986).

STATEMENT OF SENATOR HECHT
BEFORE THE SUBCOMMITTEE ON NUCLEAR REGULATION, COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
JUNE 2, 1987

MR. CHAIRMAN, I APPRECIATE THE OPPORTUNITY TO TESTIFY BEFORE THE SUBCOMMITTEE TODAY ON THE DEPARTMENT OF ENERGY'S NUCLEAR WASTE REPOSITORY PROGRAM. THE NUCLEAR WASTE ISSUE IS OF GREAT CONCERN TO NEVADA, AND HOW THE CONGRESS HANDLES THIS ISSUE WILL HAVE SIGNIFICANT IMPLICATIONS FOR OUR NATION'S ENERGY FUTURE, ENVIRONMENTAL QUALITY, AND ECONOMIC COMPETITIVENESS IN THE WORLD.

THE NUCLEAR WASTE POLICY ACT WAS SIGNED INTO LAW BY PRESIDENT REAGAN JUST A FEW WEEKS BEFORE I TOOK MY SEAT IN THE UNITED STATES SENATE. WHILE I THEREFORE DID NOT PARTICIPATE IN THE LEGISLATIVE PROCESS THAT LED TO PASSAGE OF THAT LEGISLATION, I HAVE NONETHELESS BECOME A VERY DEDICATED STUDENT OF THE ACT AND THE PROGRAM THAT WAS SET UP TO IMPLEMENT IT.

AS A MEMBER OF THE SENATE ENERGY COMMITTEE, I HAVE PARTICIPATED IN MANY OVERSIGHT HEARINGS ON THIS SUBJECT OVER THE LAST FIVE YEARS. EARLIER THIS YEAR, I TRAVELED TO EUROPE WITH A NUMBER OF OUR COLLEAGUES, INCLUDING SENATOR SIMPSON OF THIS COMMITTEE, TO STUDY

THE SUCCESSFUL NUCLEAR WASTE PROGRAMS THAT ARE UP AND RUNNING THERE.

I UNDERSTAND THERE MAY BE A LITTLE CONFUSION ON THE PART OF SOME MEMBERS OF THIS COMMITTEE AS TO MY POSITION ON THE NUCLEAR WASTE ISSUE. I WOULD LIKE TO TAKE THIS OPPORTUNITY TO MAKE THAT POSITION QUITE CLEAR. I HAVE NEVER ADVOCATED PUTTING A NUCLEAR WASTE REPOSITORY IN NEVADA. I HAVE ALWAYS URGED THAT NUCLEAR WASTE SHOULD BE DISPOSED OF SAFELY AND SENSIBLY, AND LIKE MANY MEMBERS OF THIS COMMITTEE, I HAVE SPENT A GREAT DEAL OF TIME TRYING TO DISCOVER THE BEST WAY TO ACCOMPLISH THIS. AS I STATED EARLIER, I CAME TO THE SENATE A FEW DAYS AFTER THE NUCLEAR WASTE POLICY ACT BECAME LAW. OUT OF RESPECT FOR BOTH THE LAW, AND MY COLLEAGUES WHO WORKED SO HARD TO FASHION A COMPROMISE ON THAT LEGISLATION, I TOOK WHAT I CONSIDER TO BE THE ONLY RESPONSIBLE APPROACH. I CAREFULLY WATCHED TO SEE HOW THE NEW LAW WOULD BE PUT INTO PRACTICE.

OVER TIME, IT BECAME CLEAR THAT THE ENERGY DEPARTMENT CONSIDERED YUCCA MOUNTAIN IN NEVADA TO BE A PRIME CANDIDATE FOR A REPOSITORY. OUT OF RESPECT FOR THE LAW, AND IN RECOGNITION OF THE NEED TO FIND A REAL SOLUTION TO A REAL PROBLEM, I RESISTED THE TEMPTATION TO GRAB HEADLINES BY MAKING NON-PRODUCTIVE INFLAMMATORY STATEMENTS ABOUT THE CONSIDERATION OF YUCCA MOUNTAIN. I MAINTAINED MY

POSITION THAT THE INTELLIGENT AND FAIR COURSE OF ACTION WOULD BE TO LET THE PROGRAM GO FORWARD, ACCORDING TO THE LAW, UNTIL THE FACTS COULD SPEAK FOR THEMSELVES. I TOLD THE PEOPLE OF NEVADA THAT I THOUGHT A UNITED STATES SENATOR SHOULD DEAL IN FACTS, AND THAT TO DO OTHERWISE REDUCES ONE'S CREDIBILITY AND EFFECTIVENESS IN THE SENATE.

REGRETTABLY, BY 1985 THE ENERGY DEPARTMENT HAD DEMONSTRATED CLEAR SIGNS OF STRAYING FROM THE LAW WITH REGARD TO COOPERATION AND CONSULTATION WITH THE STATES. ON SEVERAL OCCASIONS, I HAD TO PERSONALLY INTERVENE WITH THE DEPARTMENT, IN ORDER TO FREE UP GRANT MONIES NECESSARY FOR NEVADA TO PURSUE ITS ROLE UNDER THE ACT. THEN, ON MAY 28, 1986 THE ENERGY DEPARTMENT BOLDLY ANNOUNCED ITS INTENTION TO FLAGRANTLY VIOLATE THE LAW BY INDEFINITELY POSTPONING WORK ON A SECOND REPOSITORY. BY THAT TIME, I HAD SPENT ENOUGH HOURS PRESIDING OVER THE SENATE TO KNOW THAT "INDEFINITELY POSTPONING" SOMETHING WAS THE SAME AS SENDING IT TO A LEGISLATIVE GRAVEYARD. THE DEPARTMENT HAD, IN EFFECT, ANNOUNCED ITS INTENTION TO BREAK FAITH WITH THE CONGRESS AND THE AMERICAN PEOPLE. WITH IT NOW CLEAR THAT THE RULE OF LAW WAS NO LONGER GOVERNING THE ACTIONS OF THE DEPARTMENT, I DECIDED IT WAS IMPORTANT FOR ME TO JOIN SEVERAL MEMBERS OF THE NEVADA DELEGATION IN CHALLENGING THE DEPARTMENT'S ACTION IN THE COURTS.

OVER TIME, MORE EVIDENCE ACCUMULATED THAT THE ADMINISTRATION OF THE WASTE PROGRAM WAS UNREASONABLE, AND UNACCEPTABLE. ON MANY OCCASIONS, I INSISTED THAT ANY SITE CHARACTERIZATION OF YUCCA MOUNTAIN MUST CONSIDER THE IMPACT OF NEARBY NUCLEAR WEAPONS TESTING ON THE PROPOSED REPOSITORY. THIS WOULD SEEM TO BE AN OBVIOUS TECHNICAL QUESTION TO ASK, BUT IT WAS A YEAR BEFORE THE ENERGY DEPARTMENT AGREED THAT THIS MATTER SHOULD BE CONSIDERED IN A SITE CHARACTERIZATION PLAN.

AS THE DEPARTMENT'S CONDUCT BECAME MORE ARBITRARY, I CONCLUDED IT HAD BECOME NECESSARY TO STOP THE CURRENT PROGRAM IN ITS TRACKS, AND SEARCH FOR AN INTELLIGENT AND RATIONAL ALTERNATIVE THAT WOULD REBUILD THE FAITH OF THE PEOPLE OF NEVADA, AND THE NATION, IN THEIR GOVERNMENT'S ABILITY TO DEAL WITH THE NUCLEAR WASTE ISSUE IN AN HONEST AND EFFECTIVE MANNER. TO BUY US ALL SOME TIME TO SORT THINGS OUT, I SUPPORTED THE SUCCESSFUL EFFORT TO CUT FUNDING FOR THE PROGRAM IN FISCAL 1987.

MR. CHAIRMAN, THIS IS THE YEAR OF THE CONSTITUTION. OUR CONSTITUTION IS BASED ON THE PREMISE THAT IN OUR GOVERNMENT IT IS THE PEOPLE THAT RULE. FEDERAL AGENCIES EXIST TO CARRY OUT THE WILL OF THE PEOPLE, AS EXPRESSED THROUGH THEIR ELECTED REPRESENTATIVES IN THE CONGRESS. THE PEOPLE OF NEVADA HAVE LOST FAITH IN THE CURRENT NUCLEAR WASTE PROGRAM BECAUSE THEY DO NOT

FEEL THE ENERGY DEPARTMENT IS CARRYING OUT THE LAW AS THE CONGRESS INTENDED. THE NUCLEAR WASTE PROGRAM HAS LOST A LOT OF CREDIBILITY. THINGS HAVE GOTTEN TO THE POINT WHERE IF CERTAIN ENERGY DEPARTMENT OFFICIALS WERE TO GO TO NEVADA AND PROMISE THAT THE SUN WOULD RISE THE NEXT MORNING, THE LOCAL HARDWARE STORES WOULD EXPERIENCE A RUN ON LIGHT BULBS.

THE ENERGY COMMITTEE RECENTLY HELD HEARINGS WHERE A NUMBER OF SCIENTISTS TESTIFIED THAT THE THREE SITES CHOSEN FOR CHARACTERIZATION FOR A REPOSITORY COULD NOT BE REJECTED AT THIS POINT, ALTHOUGH CHARACTERIZATION MIGHT EVENTUALLY PROVE THEM UNSUITABLE. SOME HAVE TAKEN THIS AS A SIGNAL THAT SITE CHARACTERIZATION SHOULD PROCEED. I DISAGREE. THE PROCESS THAT LED US TO THIS POINT IS CHARACTERIZED BY DISREGARD FOR THE LAW, AND AN UNRESPONSIVE BUREAUCRACY. THIS HAS RESULTED IN A LOSS OF PUBLIC FAITH IN THE BASIC FAIRNESS OF THE GOVERNMENT'S COURSE OF ACTION. THE PROCESS HAS BEEN SO FAULTY THAT THE ENTIRE PROGRAM HAS BECOME DISCREDITED. UNLESS THIS SITUATION CAN BE RECTIFIED, I WILL OPPOSE ANY ATTEMPT TO LOCATE A REPOSITORY IN THE STATE OF NEVADA.

I BELIEVE THAT IT IS AT LEAST AS IMPORTANT FOR OUR PEOPLE TO TRUST THEIR GOVERNMENT, AS IT IS FOR THAT GOVERNMENT TO PURSUE TECHNICALLY SOUND POLICIES. A GOVERNMENT THAT DOES WHAT IS BEST

FROM A TECHNICAL STANDPOINT, BUT RUNS ROUGHSHOD OVER THE RIGHTS OF ITS CITIZENS AND THE STATES, MAY BE A GOOD DICTATORSHIP, BUT IT'S A BAD DEMOCRACY.

THIS CONGRESS NEEDS TO CONVINCE THE PUBLIC THAT A NUCLEAR WASTE PROGRAM CAN BE RUN FAIRLY, EFFECTIVELY, AND IN ACCORDANCE WITH THE LAW OF THE LAND. IF THIS CAN'T BE DONE UNDER THE EXISTING LAW, THEN WE SHOULD CHANGE THE LAW.

THIS MEANS WE MUST PUT A HOLD ON THE CURRENT PROGRAM, AND ALTER IT IN SUCH A WAY THAT THE PEOPLE CAN ONCE AGAIN HAVE CONFIDENCE IN THE FEDERAL GOVERNMENT. HAPPILY, I THINK THERE ARE SOME BASIC IMPROVEMENTS THAT WE CAN MAKE IN THE PROGRAM DURING THIS TIME, THIS COOLING OFF PERIOD. I BELIEVE THAT WE CAN LEARN SOME LESSONS FROM THE SUCCESSES IN EUROPE. FIRST, WE SHOULD LET SPENT NUCLEAR FUEL REMAIN IN ABOVE-GROUND STORAGE FOR FIFTY YEARS BEFORE MOVING IT TO A REPOSITORY. IT WILL THEN BE BOTH THERMALLY AND RADIOACTIVELY COOLER, MAKING IT SAFER AND CHEAPER TO HANDLE, TRANSPORT, AND DISPOSE OF. SEVERAL WEEKS AGO I INTRODUCED S. 1141, A BILL WHICH WOULD PROVIDE FOR SUCH A LONGTERM STORAGE PERIOD BEFORE WASTE IS PLACED IN A REPOSITORY.

SECOND, WE SHOULD TAKE ADVANTAGE OF A MORATORIUM ON THE CURRENT PROGRAM, NOT ONLY TO TAKE STEPS TO GET THE PROGRAM BACK ON THE

RIGHT TRACK, BUT ALSO TO REEXAMINE THE FEASIBILITY OF REPROCESSING SPENT FUEL AS A WAY TO REDUCE THE DANGER OF NUCLEAR WASTE. I HAVE INTRODUCED S. 1211, A BILL DESIGNED TO ACCOMPLISH SUCH A STUDY.

I HAVE HEARD TWO OBJECTIONS TO REPROCESSING: FIRST, THAT IT IS EXPENSIVE, AND SECOND, THAT IT RAISES THE DANGERS OF NUCLEAR WEAPONS PROLIFERATION. I UNDERSTAND, HOWEVER, THAT IF SPENT FUEL WERE STORED FOR A FEW DECADES BEFORE REPROCESSING, THEN THE COST OF REPROCESSING WOULD GO DOWN SIGNIFICANTLY. ALSO, LET'S NOT FORGET THAT IN THE ABSENCE OF REPROCESSING WE WILL HAVE TO PROCEED WITH A FULLBLOWN FIRST AND SECOND REPOSITORY PROGRAM, AND ONE OR MORE MONITORED RETRIEVABLE STORAGE FACILITIES, AT A COST OF MANY BILLIONS OF DOLLARS.

WITH REGARD TO THE PROLIFERATION QUESTION, I UNDERSTAND THE FRENCH HAVE BEEN REPROCESSING FOR MORE THAN TWENTY YEARS NOW, AND I AM NOT AWARE OF ANY EVIDENCE THAT THIS ACTIVITY, WHICH IS TAKING PLACE SO MUCH CLOSER THAN WE ARE TO THE MIDEAST, AND OTHER VOLATILE PARTS OF THE WORLD, HAS IN ANY WAY INCREASED THE PROLIFERATION OF NUCLEAR WEAPONS. IF FRENCH REPROCESSING HAS NOT LED TO PROLIFERATION, THEN I DOUBT AMERICAN REPROCESSING WOULD.

I HOPE THE COMMITTEE WILL BE ABLE TO SUPPORT BOTH OF MY BILLS, S. 1141, AND S 1211.

THANK YOU AGAIN, MR. CHAIRMAN, FOR THE OPPORTUNITY TO TESTIFY HERE TODAY ON THE REPOSITORY PROGRAM. I LOOK FORWARD TO WORKING WITH MEMBERS OF THE COMMITTEE ON THIS AND OTHER ASPECTS OF THE NUCLEAR WASTE PROGRAM.

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COMMITTEE ON VETERANS' AFFAIRS
SUBCOMMITTEE ON HOSPITALS AND HEALTH CARE
SUBCOMMITTEE ON HOUSING AND MEMORIAL AFFAIRS

SELECT COMMITTEE ON NARCOTICS
ABUSE AND CONTROL

STATEMENT OF CONGRESSMAN JOHN G. ROWLAND
before the
SUBCOMMITTEE ON NUCLEAR REGULATION
of the
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
June 3, 1987

Senator Breaux and Members of the Subcommittee:

Thank you for permitting me to testify today on the subject of the transportation of nuclear wastes. Clearly, this hearing is very timely in view of the fact that the federal law governing this issue -- the Hazardous Materials Transporation Act of 1975 -- is due to be reauthorized this year by Congress. As such, I would like to commend you for holding this hearing.

As the reauthorization process moves forward, I would submit that the time has come for both the House and Senate to come to terms with one simple fact. Quite simply, that fact is the current statute governing the routing of hazardous materials over our nation's rail and highway system does not work.

The law sets forth on one hand the need for national uniform routing standards. Yet, on the other hand, any town or city can try to veto such standards merely by invoking the nonpreemption determination clause. We have seen this happen with regard to New York City in particular.

In my opinion, Congress needs to fish or cut bait. Either we provide for uniform national routing standards under the Hazardous Materials Transportation Act or we don't. If the latter is going to be the case, then all we are doing is tantamount to continuing the status quo -- the effect of which is to allow localities to utilize the statute and erect barriers to permitting hazardous materials to be transported through their borders.

A classic example of the need for national uniform standards is borne out by the on-going battle between my State of Connecticut and the City of New York over the routing of spent nuclear fuel emanating from the Brookhaven National Laboratory on Long Island.

As you very well know, New York City has invoked the nonpreemption determination procedure to avoid having this nuclear waste traverse the metropolitan area. Alternatively, they propose to load this fuel on barges, send it across Long Island Sound to Connecticut, and then truck it on a circuitous route through Connecticut to the New York State border via Interstate 84.

This controversy has preoccupied a significant amount of my time since I entered the Congress in 1985. By way of background, my district would be the most impacted were New York City to win its bid for a nonpreemption determination.

In looking at the need for reform to the routing statute in the Hazardous Material Transportation Act, I believe it should be noted that New York City's fight with the federal Department of Transportation over this matter is now eleven years old -- and yet there is no end in sight to this controversy. To put this in perspective, I was a sophmore at Villanova University when this all started.

Quite frankly, in my opinion New York City has dragged this matter out solely because of bald faced politics. For sure, I'm not crazy about the fact that other nuclear waste is being transported through Connecticut but nonetheless, this is a fact of life. For New York City to try and shove off to my State the responsibility for routing nuclear waste which is produced at Brookhaven laboratory, however, is -- in my opinion -- outright arrogance.

If New York wants all of the benefits which result from the Brookhaven Laboratory, then they must be willing to take some of the responsibilities. And, one of those responsibilities is that the spent nuclear fuel from that facility should be transported via the most direct surface route possible, which means through New York City and not on a circuitous route through my district and the State of Connecticut.

Yet despite New York City's pitiful case in this matter, the law allows them to drag this matter out ad infinitum. The bottom line is that there is one major problem with the City's case -- their own paid consultants don't support it!

The firm of Arthur D. Little, Inc., was commissioned by the City two years ago to evaluate the issue of routing Brookhaven's waste through Connecticut. What did the report conclude? The Little report specifically did not recommend that the Connecticut routes be used nor did they suggest one way or the other as to the disposition of the City's nonpreemption determination request.

If New York City's case in this matter were so convincing, I have to believe that their own consultants would have said so. What's worse, however, is much of the analysis which was utilized in the report. For instance, the Little firm claimed that the Connecticut routes might be marginally safer. This ignored the fact that barging of the waste would be involved as well as the fact that spills could occur. Nor did the report factor in the longer routes which would be involved.

The short of it is, the Little analysis of New York's case has more holes than a piece of swiss cheese. However, it is that very document which provides the basis for the City's argument in their bid for approval of the nonpreemption determination filing.

Yet, New York City persists in their attempts to evade responsibility in this matter. Let's look at their track record. They have lost in the Court of Appeals. They have lost in the Supreme Court. They have lost every administrative action which has been decided to date, and now, they are back in Court suing D.O.T., rehashing the same old arguments. In short, I haven't seen so many losses since the '62 Mets.

I am confident that history will repeat itself and that they will lose once again in the current filing before the United States District Court for the Southern District of New York. The problem is, the process could go on forever with New York City filing a litany of appeals. Quite frankly, although I am somewhat sympathetic to circumstances which might be unique to localities and thus warrant the granting of nonpreemption determinations, I am afraid that the law as it currently stands affords too much of an opportunity for abuse of the process. New York City clearly shows this to be the case.

As such, it would be my recommendation that some type of finality be established to the routing process. To this end, I am giving serious consideration to introducing legislation which would have the practical effect of eliminating outright the ability of localities to attempt to invoke nonpreemption determinations. I regret that this is necessary; however, I simply do not see any alternative.

I must tell you that if New York City wins this case, I am prepared to suggest to towns and cities in the 5th Congressional district that they file a similar application. After all, the Connecticut routes would involve Interstate 84 which runs directly through Waterbury and Danbury and since there is no alternative beltway, the case they could put forth would have the same validity as New York's.

What is at stake here is the integrity of the Hazardous Materials Transportation Act, pure and simple. It is my opinion that if New York City wins this case, the HMTA is effectively gutted. Our nation's ability to efficiently and effectively move hazardous materials to their final storage sites, would thus be seriously impaired.

Consequently, it would be my recommendation that serious consideration be given to revising tbe Hazardous Materials Transportation Act along the lines of what I have detailed.

In closing, I do appreciate the opportunity to testify before you today and at this point, I would be happy to answer any questions which you might have.

STATEMENT OF EDITH B. PAGE

Project Director
Office of Technology Assessment

Testimony Before
Subcommittee on Nuclear Regulation
Committee on Environment and Public Works
United States Senate

THE TRANSPORTATION OF HAZARDOUS MATERIALS

June 3, 1987

STATEMENT OF EDITH B. PAGE

Good morning. It is a pleasure to report to the Subcommittee on Nuclear Regulation on the results of the Office of Technology Assessment's (OTA) study on the Transportation of Hazardous Materials.

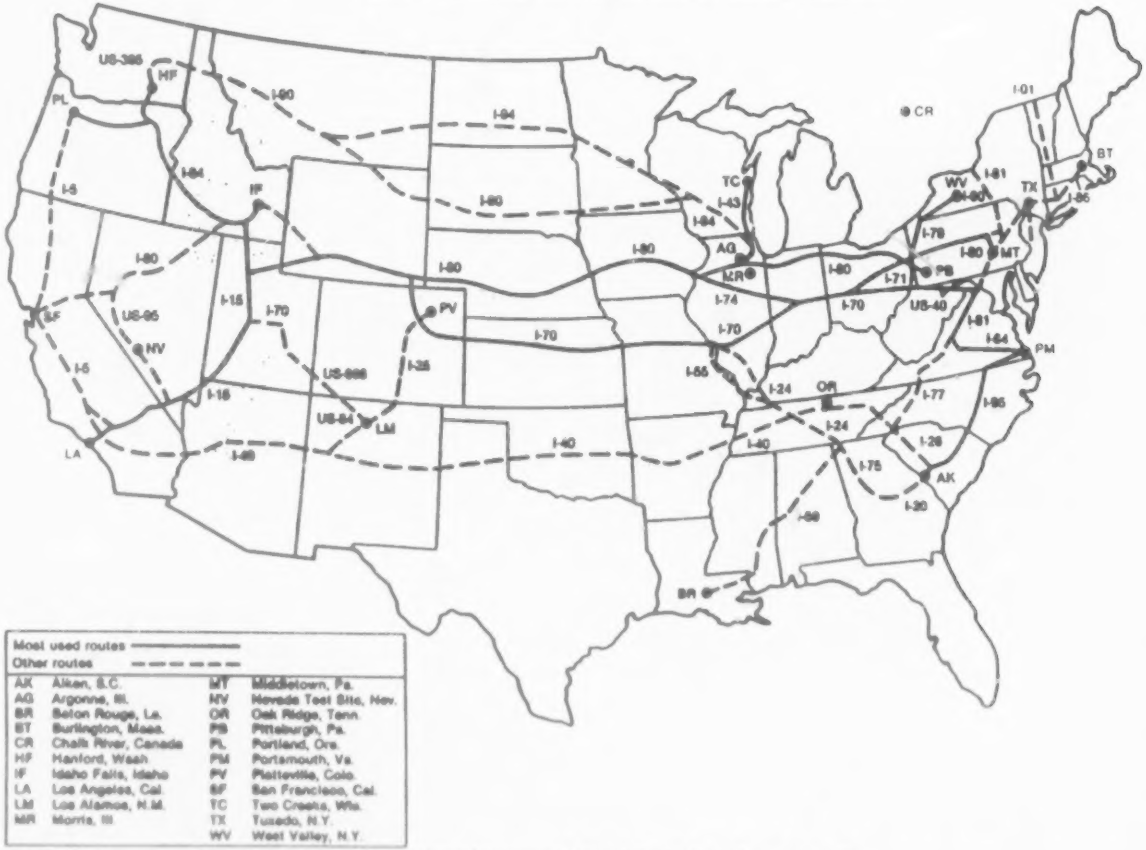
In June 1984, the Senate Committee on Commerce, Science, and Transportation asked OTA to look at a spectrum of issues related to the transportation of hazardous materials. The Committee expressed special interest in information on the containers and procedures for the transportation of radioactive materials, the subject of today's hearings and the bills under consideration by this Subcommittee. OTA's report was released in July of 1986, and today I will summarize relevant findings from it and highlight issues that are still unresolved.

Radioactive materials comprise only about 2 percent of the shipments of the millions of shipments of hazardous materials made annually in the United States. These materials are shipped by rail, truck, and air to facilities throughout the country. The major highway routes are shown in Figure 1. Over two-thirds of the radioactive shipments are for medical and industrial purposes; almost 7 percent are waste, and only 4 percent of these shipments are connected with the nuclear fuel cycle. Despite the very small fraction of all hazardous materials transportation that shipments of these materials represent, their movements arouse more intense concern among States, local governments, and interested citizens than other, much more common, hazardous shipments.

The Federal framework governing the transportation of radioactive materials is complex. Four Federal agencies play important, separate, but closely related roles. While the Department of Transportation (DOT) has primary Federal responsibility, the Nuclear Regulatory Commission (NRC) regulates, reviews, and certifies the packaging and some of the transportation operations of its licensees for shipments of spent fuel and

FIGURE 1

Highways Commonly Used for Radioactive Materials Shipments


US-395
HF
PL
I-90
I-94
I-5
I-84
IF
I-80
SF
US-95
NV
I-15
I-70
PV
I-25
US-666
US-84
LM
I-5
LA
I-40
TC
I-43
I-94
AG
MR
I-74
I-70
I-55
I-24
OR
I-40
I-24
I-75
I-59
BR
CR
WV
I-81
I-90
TX
I-78
I-80
MT
PB
I-71
US-40
I-81
I-64
PM
I-77
I-95
I-26
AK
I-20
I-91
BT
I-86
Most used routes
Other routes
AK Aiken, S.C.
AG Argonne, Ill.
BR Baton Rouge, La.
BT Burlington, Mass.
CR Chalk River, Canada
HF Hanford, Wash
IF Idaho Falls, Idaho
LA Los Angeles, Cal.
LM Los Alamos, N.M.
MR Morris, Ill
MT Middletown, Pa.
NV Nevada Test Site, Nev.
OR Oak Ridge, Tenn.
PB Pittsburgh, Pa.
PL Portland, Ore.
PM Portsmouth, Va.
PV Platteville, Colo.
SF San Francisco, Cal.
TC Two Creeks, Wis.
TX Tuxedo, N.Y.
WV West Valley, N.Y.

SOURCE: Sandia National Laboratories, An Assessment of the U.S. Department of Transportation's Radioactive Materials Routing Report, January 1986.

other highly radioactive materials. The Department of Energy (DOE) has separate authority, granted by DOT regulations, to approve the packaging for radioactive materials it ships and certain operational aspects of its own research, as well as defense-related transportation of radioactive materials. The Federal Emergency Management Agency (FEMA) has responsibility for emergency planning and assistance to States in developing response capabilities.

While the specific allocations of authority are spelled out in detailed Memoranda of Understanding between the agencies, OTA found these agreements to be confusing to, and widely misunderstood by, the public. Regulatory distinctions between Federal agencies are meaningless to State and local officials, whose primary concern is ensuring the safety of their citizens from the risks represented by the shipments. As the public sees it, DOD and DOE shipments travel under regulations different than the more familiar ones that NRC licensees must follow. Even the NRC regulations do not adequately address some important State transportation concerns, such as risk analysis for alternate routes. Transportation of radioactive materials is of such high visibility and concern that the apparent lack of Federal sensitivity to State, local and tribal issues is a major source of confusion, frustration, and occasionally, outraged indignation on the part of the public. It is in this area that the largest number of issues remain unresolved. Indeed, the bills before this subcommittee today, S. 833, S. 1008, and S. 1269, represent efforts to address head-on some of these concerns, and I will discuss them in more detail later.

To diminish some of the most glaring discrepancies between Federal approaches, the Department of Energy announced last year that it will seek NRC certification for all casks used for shipments under the Nuclear Waste Policy Act. Moreover, effective sometime in the summer of 1987, DOE will begin using notification procedures for its unclassified shipments identical to those required by the NRC. In addition, DOE is working with NRC to align other package certification standards more closely with NRC standards and to develop common safeguard procedures. These efforts will lessen the differences among Federal procedures that cause friction between DOE and State and local officials.

PACKAGING STANDARDS AND FEDERAL PROCEDURES

As requested, OTA scrutinized carefully Federal standards for the containers for radioactive materials and transportation procedures. Unlike packaging for other hazardous and radioactive materials, the containers for the most dangerous radioactive materials are constructed so as to prevent releases even in the case of extremely severe transportation accidents. OTA concluded that the standards set by the Nuclear Regulatory Commission for these packages produce exceptionally durable containers if the standards are meticulously followed during cask manufacture and transportation. Under these conditions, the containers provide a much greater degree of public protection than that afforded in any other current hazardous material shipping activity.

OTA concluded that the policies and programs most in need of improvement to assure the overall safety of radioactive materials transportation include institutional, procedural, and operational controls and arrangements. These include quality assurance and quality control measures in cask manufacture and maintenance activities; operator, handler, and driver training; and inspection. All of these have both technical and behavioral components. The technical aspects are governed by Federal standards and regulations; the behavioral components are far less amenable to such controls. Over half of all vehicle accidents and hazardous materials spills that cause injury or environmental damage are caused by human error. This means that ensuring the quality of every part of the transportation process is important, although OTA recognizes that maintaining consistent high quality human performance is the most difficult of goals.

OTA learned that State inspectors have found high violation rates of Federal hazardous materials regulations in general; even vehicles carrying radioactive materials are not always in compliance with regulations. A five year Washington State study completed in 1984 showed that over 25 percent of the trucks entering the State carrying both high-level and low-level radioactive materials were issued arrest or warning tickets for violations during port of entry inspections. Continued Federal support for development of State inspection and enforcement capabilities is important for transportation safety.

STATE CONCERNS

Most of the nuclear fuel cycle and waste shipments move by truck or rail. Consequently careful handling by transporters and emergency response planning and capabilities must be priorities for Federal agencies, transportation corridor States and States with nuclear facilities. State and local officials feel great responsibility for the safety of their citizens, and many have passed additional regulations to control risks that they feel threaten them despite Federal safeguards. Individual State registration programs, permit requirements, and routing and time of day restrictions create a regulatory patchwork that complicates enforcement and training and is burdensome to industry. If the Congress should decide that States and tribes may impose separate regulations for fees, incident reporting, notification, and driver requirements for transportation of radioactive materials, as S. 1008 provides, addition of language requiring consultation and agreement with neighboring corridor States on routes, safe havens, and any other items that will affect those States is of utmost importance. Having fifty sets of differing regulations would create grave difficulties for efficient and safe transportation.

Moreover, OTA found that Federal programs to provide information and technical assistance to State and local governments have been poorly coordinated. Improved information and Federal assistance in planning for the transportation of hazardous materials is essential for States and local jurisdictions that are considering routing or other transportation regulations. This remains a need inadequately addressed by Federal programs. Federal risk and environmental impact assessments of alternative routes for repository, MRS, and corridor States, such as those called for in the bills being considered could be of great assistance to State decisionmakers as they plan for future shipments under a repository or MRS program. Furthermore, Federal facilities, such as the Oak Ridge National Laboratory, have rich resources in computer mapping and risk analysis programs. These could be extremely useful to States as they begin to evaluate risks in their own and in neighboring States.

OTA has learned that Nevada and Washington States, as potential repository sites, are attempting to work with nearby corridor States to establish a basis for making mutually acceptable routing and emergency response decisions. Their efforts represent an exemplary approach that DOE and DOT would do well to support, encourage, and emulate. OTA concluded that the State, local, and Indian tribe officials must be treated as equal partners with the Federal government if a workable transportation system is to emerge. Transportation decisions taken unilaterally by any one of these groups have an impact on all other groups. If these groups can work cooperatively rather than as adversaries, then transportation planning and decisionmaking processes will be eased.

OTA is pleased to have participated in identifying for Congress some of the major concerns related to this essential activity.

STATEMENT OF ALAN I. ROBERTS, DIRECTOR
OFFICE OF HAZARDOUS MATERIALS TRANSPORTATION
RESEARCH AND SPECIAL PROGRAMS ADMINISTRATION
DEPARTMENT OF TRANSPORTATION
BEFORE THE
NUCLEAR REGULATION SUBCOMMITTEE
OF THE
SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
JUNE 3, 1987

Good morning. I am pleased to be here to discuss the Department's role in carrying out our responsibilities for the safe transportation of radioactive materials.

There are primarily three Congressional Acts directly related to the surface transportation of radioactive materials: The Hazardous Materials Transportation Act of 1974, as amended; the Atomic Energy Act of 1954, as amended; and the Nuclear Waste Policy Act of 1982.

The Hazardous Materials Transportation Act (HMTA) of 1974 provides the primary legislative authority for assuring the safe transportation of hazardous materials by all modes. That Act requires the Secretary of Transportation to establish a regulatory program to carry out the purposes of the Act. Responsibility for implementation of the Act has been delegated by the Secretary to the Research and Special Programs Administration (RSPA).

The Atomic Energy Act, as amended, authorizes the Nuclear Regulatory Commission (NRC) to license and regulate the receipt, possession, use, and transfer by licensees of most kinds of radioactive materials.

The Nuclear Waste Policy Act (NWPA) of 1982 established a national policy for the safe storage and disposal of spent nuclear fuel and high-level waste. The NWPA places responsibility for providing for the actual transportation of these materials on the Department of Energy (DOE). This transportation is subject to the safety regulations of the Department of Transportation (DOT) under the HMTA.

In addition to these NWPA responsibilities, DOE carries out extensive programs under the Atomic Energy Act of 1954, as amended, and produces nuclear materials and wastes both at its research facilities, such as Brookhaven National Laboratory in New York, and at defense facilities, such as the Hanford Site in Washington. In most of these activities, DOE is a "shipper" subject to DOT rules and regulations, which incorporate by reference the NRC standards for packaging of high-level radioactive materials..

DOT and the NRC have overlapping regulatory responsibilities. Therefore, in order to coordinate our efforts, we adopted a Memorandum of Understanding (MOU) in 1979. A copy will be provided for the record. Basically, the MOU gives DOT the responsibility for developing overall safety standards covering the mechanical condition of carrier equipment, qualifications of carrier personnel, loading and unloading, handling, storage, and vehicle placarding requirements. DOT has responsibility for developing safety standards for classifying radioactive materials, for the design specifications and performance requirements of packages for quantities of radioactive materials, other than fissile materials not exceeding Type A limits, and for low specific activity (LSA) materials. The NRC is responsible for regulating safety in receipt, possession, use, and transfer of byproduct, source, and special nuclear materials. Also, NRC reviews and approves package design for fissile materials and for other radioactive materials exceeding Type A limits. DOT has "incorporated by reference" the NRC packaging standards for such materials.

DOT and DOE have shared responsibilities under the NWPA and, therefore, we adopted a MOU in 1985 (a copy will be provided for the record) to ensure that there would be no duplication of effort. Basically, that MOU specifies that the management of the transportation of spent fuel and high-level radioactive wastes under the NWPA resides with DOE's Office of Civilian Radioactive Waste Management (OCRWM), and that the transportation of this material to any repository developed under the NWPA will be subject to applicable DOT regulations promulgated by RSPA. The MOU also provides for the establishment of procedures for consultation and the exchange of information.

DOT, NRC and DOE realize that the Congressionally mandated framework can be confusing at times, particularly to the states. In addition, we recognize the states' interest and concerns in assuring that radioactive materials shipments moving through their jurisdictions are transported in as safe a manner as is practicable. In response to their concerns, RSPA is sponsoring, and NRC, DOE, and FEMA are participating in, federal/state regional workshops designed to exchange information and address concerns with the states. The workshops will be held annually and will, we believe, result in a more cooperative federal/state partnership in this endeavor.

The remainder of my testimony will discuss how RSPA has carried out its responsibilities under the HMTA, NWPA, and applicable MOU's and programs anticipated in FY 88 and FY 89.

DOT/RSPA Regulations

DOT has regulatory responsibility for the transportation of radioactive materials. The Department promulgates and enforces detailed regulations that govern communications, packaging, shipping, carriage, stowage, and handling of radioactive materials by all modes of transport.

The DOT Hazardous Materials Regulations include a comprehensive system of regulations pertaining to the shipping and transportation of radioactive materials. They include requirements pertaining to preparation of shipping papers, placarding of vehicles, use and preparation of packagings, the marking and labeling of packagings, loading, and transportation operations, including driver training. The intent of the regulations is to fully communicate the presence of radioactive materials during transportation, minimize radiation exposure, reduce the potential for damage to their packagings during transportation, and otherwise assure they are safely transported.

Probably the Department's most extensive hazardous materials rulemaking to date addressed the question of what regulations were required to govern the highway routing of radioactive materials. This rulemaking, known by its docket number, HM-164, resulted in a general routing rule for all placarded radioactive materials and a specific routing rule for highway route-controlled quantity shipments, such as spent fuel. Both routing rules have risk minimization as their basic goal. In addition, DOT regulations require of highway route-controlled quantity radioactive materials to be transported either over Interstate System highways selected to reduce time in transit (using Interstate System beltways or bypasses when available), or over a state designated alternative route.

As stated, DOT regulations include a mechanism for state designation of alternate routes for highway route-controlled quantity shipments. DOT recognizes that not all segments of the Interstate System are of equal caliber and that in certain areas, non-Interstate routes may be available which could provide an equal or greater level of safety. We further recognize that the task of identifying preferable alternative local routes are best performed by states in consultation with affected jurisdictions. Several states have availed themselves of this provision to designate non-Interstate preferred routes.

While the routing aspects of HM-164 have generated the most discussion, other provisions ensure the safe transport of high-level radioactive materials by highway. A driver training requirement was established that requires certification that each driver is familiar with the appropriate hazardous materials regulations, the properties and hazards of the radioactive materials being transported, and the procedures to be followed in case of an accident or other emergency. In addition, HM-164 requires the motor carrier of spent fuel to be in compliance with a physical security plan required by NRC, or an equivalent plan approved by DOT.

Public safety is the overriding reason for the development and enforcement of the extensive body of regulations. The single most important factor contributing to this safety is the packaging of the materials.

The radioactive materials transportation safety record has been excellent due to this comprehensive body of regulations. In over four decades of transporting radioactive materials, there has never been a death or serious injury due to a release of radioactive materials. The Department sees no evidence to alter the conclusion that, when current federal rules are complied with, radioactive materials can continue to be transported with a confident level of safety.

As I have stated, our relationship with DOE is best characterized as one of regulator-regulated. This is not to say that we do not cooperate with one another when appropriate. A question arose at the April 24, 1987 hearing before the Senate Commerce Committee regarding the extent to which the Department of Energy is subject to the regulations of the Department of Transportation. DOE is clearly subject to our regulations when it offers materials for transport in commerce; for example, when DOE contracts for transportation services with a commercial carrier, such as highway shipments from Brookhaven National Laboratory, or rail shipments from Three Mile Island. When DOE uses its own equipment and personnel to transport radioactive materials, DOE is not subject to DOT regulation. DOE has agreed that all shipments made under the NWPA will be made in compliance with all DOT regulations.

DOT Inspection and Enforcement

Because of the vast number of trucks carrying hazardous materials, the assurance of regulatory compliance requires more than an exclusively federal enforcement effort. A federal/state enforcement partnership is an essential part of the federal regulatory program. All of the more than 1,000 federal transportation safety inspectors have received general training pertaining to the inspection of radioactive shipments, and approximately 200 have received in-depth training that gives them the ability to make more detailed inspections of radioactive shipments. RSPA is working to expand the number of qualified radioactive materials inspectors through the Cooperative Hazardous Materials Development Program (COHMED) and our nuclear workshops.

It is also important to note that the Commercial Vehicle Safety Alliance (CVSA) is developing, under a DOE contract, uniform safety inspection criteria for commercial motor vehicles used to transport spent nuclear fuel. The CVSA is an organization of state and provincial governmental agencies and representatives from private industry in the United States and Canada, dedicated to improvement of commercial vehicle safety. CVSA's primary objective is implementation of uniform safety inspection criteria for all commercial vehicles, and the nuclear inspection project is a special emphasis area. Only the representatives of the more than 40 participating state enforcement agencies may vote on issues addressed at CVSA meetings. However, RSPA and FHWA actively participate in CVSA meetings in a supporting role. Recently, our staff participated in a CVSA meeting during which a first draft of the inspection criteria for vehicles transporting nuclear materials was completed.

To assist us in this effort and to ensure better communication and coordination between ourselves and among the states, RSPA sponsors the COHMED Program which allows the federal and state people responsible for hazardous materials transportation to share information regarding regulations, training, interpretations, enforcement, and research, which will assure a better regulatory scheme and greater uniformity.

As previously mentioned, we have also initiated a series of regional workshops focused on radioactive materials transportation issues. Workshops have been held in Boise, Idaho, and Santa Fe, New Mexico, and one is scheduled for Cedar Rapids, Iowa, for June 1987. Two more workshops, in the Northeast and Southeast, will be held later this year. These workshops were implemented by RSPA with the cooperation of Department of Energy, Nuclear Regulatory Commission, and Federal Emergency Management Agency to develop a coordinated and cooperative effort among state, Indian nations, and federal agencies which have regulatory and enforcement responsibilities for assuring the safe transportation of radioactive materials. The agencies share information regarding nuclear materials, emergency preparedness and response to incidents, inspection and enforcement, and notification of shipments. We expect to hold these workshops on an annual basis and continue active support and participation in public forums directed at resolving the public's concerns for the safe transport of radioactive materials.

The recent rail shipments of radioactive debris from the Three Mile Island facility in Pennsylvania to the Department of Energy's Idaho National Engineering Laboratory have attracted substantial public interest. As a matter of policy, the Federal Railroad Administration (FRA) is inspecting the track and signal system over the entire route prior to the start of any nuclear shipping campaign by rail. This rail system inspection is repeated at least every six months. In addition to the rail and signal system inspection, FRA performs a safety inspection of the rail car prior to every shipment, and RSPA performs periodic radiation safety inspections of the casks. This policy has applied to the Three Mile Island shipments and rail shipments from Cooper Station, Nebraska, and Monticello, Minnesota, to Morris, Illinois.

DOT Training

A particularly important aspect of the national program to assure safety and uniformity in the transportation of hazardous materials is the provision of appropriate training to federal and state enforcement personnel who have responsibility for the enforcement of hazardous materials regulations.

The Secretary of Transportation established the Transportation Safety Institute (TSI) in Oklahoma City, Oklahoma, to improve transportation safety and security by designing and conducting training programs responsive to modal and intermodal requirements. Radioactive materials transportation safety is one of the subject areas for which TSI provides training services. This training is available either as in-residence training at TSI or the training can be provided off-site at a state location. During the past four years (FY 83-86), TSI provided in-depth radioactive materials inspection training to 44 state inspectors and 154 federal motor carrier safety inspectors. The training course, of 32 hours duration, addresses the classification of radioactive materials and packaging requirements in addition to the basic requirements pertaining to preparation of shipping papers, placarding, marking, and labeling. Also, TSI conducts training programs pertaining to transport of radiopharmaceuticals. Enhancement of training in this area is necessary because virtually most radioactive materials incidents in transportation involve these materials.

Research and Policy Analysis

In FY 88, RSPA is requesting an increase in funding to carry out our responsibilities under the NWPA. The public and the Congress continue to express great interest in the transportation of radioactive materials. The debate surrounding the implementation of the NWPA is expected to intensify. We are involved with this process through our participation in numerous meetings and workshops, striving for resolution of the many issues related to the safe transport and disposal of our Nation's commercial spent nuclear fuel.

In this regard, it is expected that when the issues surrounding the DOE's proposed siting of a Monitored Retrievable Storage (MRS) facility in Tennessee are resolved, DOT will be called upon to substantively comment on the adequacy of various MRS transportation schemes. We are developing an in-house capability at our Transportation Systems Center (TSC) to provide an independent assessment of the transportation aspects of the MRS proposal.

The NWPA directs that private industry be utilized to the fullest extent possible in performing transportation functions. Only if the Secretary of Transportation determines that private industry is inadequate to perform the transportation services necessary to carry out commercial nuclear waste disposal programs, may DOE use direct federal transportation services. While DOE appears to be fully committed to using the private sector to the maximum extent possible for its transportation services, DOT will be prepared to carry out its NWPA responsibilities by playing an active role in the numerous NWPA planning activities.

DOT's Federal/State Relationship

The HMTA expressly defines its relationship to state and local law. Section 112(a) states clearly that "any requirement, of a State or political subdivision thereof, which is inconsistent with any requirement set forth in (the HMTA) or regulations issued under (the HMTA), is preempted." The inclusion of this express preemption provision makes it clear that Congress did not intend the HMTA and its regulations to occupy the field so completely as to preclude any state or local action. The HMTA preempts only those state and local requirements that are "inconsistent."

To assist state and local governments, transportation companies, and other interested parties, RSPA has provided an administrative inconsistency ruling process for informal resolution of preemption issues arising under the HMTA.

Over half of the Department of Transportation's inconsistency rulings under the HMTA have involved state and local requirements concerning the transportation of radioactive materials. The gist of these rulings is that DOT regulations, in conjunction with NRC regulations incorporated by reference, have preempted almost the entire field of radioactive materials transportation. States can adopt routing requirements, adopt substantive requirements identical to the federal ones, and enforce those requirements through state inspections. In one inconsistency ruling, we sustained a state transit fee which was imposed to fund inspections.

DOT's Legislative Proposal

Administrator Douglass, in her statement before the Senate Commerce Committee, mentioned a number of areas of concern in the hazardous materials transportation area, including nuclear transportation. Two of those concerns are the routing of hazardous materials and the multiplicity of state and local laws pertaining to hazardous materials transportation. These two issues are currently being addressed in our hazardous materials transportation reauthorization proposal, which is currently under review by concerned agencies. I expect the Department will propose legislation very soon.

Thank you. I will be happy to answer your questions.

PREPARED TESTIMONY
SUBMITTED BY THE
UNITED STATES NUCLEAR REGULATORY COMMISSION

TO THE

SUBCOMMITTEE ON NUCLEAR REGULATION
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

CONCERNING
RADIOACTIVE MATERIAL TRANSPORTATION

PRESENTED BY
HUGH L. THOMPSON, JR.
DIRECTOR, OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS

SUBMITTED: JUNE 3, 1987

Mr. Chairman and Members of the Committee: I am pleased to have the opportunity to appear before you today to testify on nuclear waste transportation. I will present an overview of the role of the U.S. Nuclear Regulatory Commission (NRC) and our interactions with the principal federal agencies in radioactive material transport. This testimony identifies the kinds of radioactive material in transport, the basic approaches in regulating radioactive material transport safety, what the NRC role is in assuring safety, how we accomplish that role, and the technical basis for concluding that the risk to the public health and safety from radioactive material transport is small.

The Commission is currently reviewing the three legislative proposals, S.833, S.1008, and S.1269, affecting transportation of radioactive materials and will provide comments for the record.

Background on Shipments

An NRC co-sponsored survey (Transport of Radioactive Material in the United States, SAND 84-7174, April 1985), indicated that during a recent one year period ending in 1982, about 2.8 million packages containing radioactive material were shipped in the U.S. In terms of curie content, the packages varied from very small quantities in smoke detectors to large amounts in spent fuel shipments. In response to this diversity, transport safety programs have been developed that impose controls appropriate to the radiological hazard of the package contents.

Approaches to Safety

Limitation of package contents and package design requirements are basic controls that are applied to the transport of radioactive material. For example, "Type A" quantities of radioactive material are shipped in "Type A" packages. This quantity is defined as that amount which if released in an accident would not be expected to result in exposures exceeding international organ or body dose limits. Since "Type A" package contents are limited to small quantities, these packages are not designed to withstand severe accidents. "Type B" packages are used for shipments which contain radioactive material in excess of the "Type A" quantity. Because there is no direct limit on "Type B" package quantity, these packages are designed to meet very rigorous standards and must be shown to withstand severe transportation accidents.

Basic DOT and NRC Regulatory Role

The "Type A" quantity serves as a basic regulatory breakpoint. Under the NRC/DOT Memorandum of Understanding, DOT regulates "Type A" and smaller quantities of radioactive material including Low Specific Activity materials, in addition to their general regulatory responsibilities for carriers, vehicles, shipping papers, route selection, safety of routes, driver training, etc. NRC regulates the packaging for commercial shipments of "Type B" quantities of radioactive materials which exceed "Type A" quantities under 10 CFR Part 71. In addition, for spent fuel shipments, the NRC reviews shipping routes for susceptibility to sabotage or diversion, and approves routes found acceptable from this standpoint.

NRC's Type B Package Standards

The safety of a "Type B" shipment rests primarily on the integrity of its packaging. NRC requirements for spent fuel packages exemplify the Agency's involvement in "Type B" packaging regulations and certification, and will be used for illustrative purposes hereafter.

To provide safety in transport, a spent fuel package must provide three functions: containment of the spent fuel; shielding from radiation emitted by the spent fuel; and control of the spent fuel configuration so as to prevent a chain-reaction (i.e., maintain nuclear subcriticality). NRC's packaging standards have been developed to assure that spent fuel casks provide these functions under both normal transport and accident conditions in transport. The standards are performance oriented, i.e., the standards basically state how the packages must perform under normal as well as accident test conditions. The performance standard approach for spent fuel packagings was developed and accepted internationally, with the requirements expressed in terms that may be reproduced and satisfied by test or analysis.

NRC's performance standards for casks consist of two components: (a) package tests, to simulate transport accident conditions; and (b) acceptance criteria, to gauge the package's performance after being subjected to the tests. Hypothetical accident conditions are simulated by a specified, sequential series of severe impact, puncture, fire, and immersion environments. These are:

(1) Free Drop - 30-foot drop of the cask onto a flat, horizontal, unyielding surface;

(2) Puncture - 40-inch free drop of the cask onto a 6-inch diameter steel bar, 8 inches long.

(3) Thermal - Totally engulf cask in a fire or furnace at 1475°F for 30 minutes. (Other thermal conditions must be met.)

(4) Submersion - Immerse all packaging surfaces under 3 feet of water for 8 hours.

The acceptance criteria used with the tests are expressed in terms related to the three safety functions described earlier: the package may not release more than a small amount of its contents, exhibit more than a small increase in the external radiation levels, and the package must maintain the subcriticality of its contents.

As part of the NRC's package design certification process, an applicant must demonstrate that a package design meets the acceptance criteria after being subjected to the test conditions. The demonstration may be accomplished by actual tests, but demonstration by analysis is more common. The package design is reviewed by the NRC engineering staff to verify its accident resistance. A certificate must be issued by the NRC before a package fabricated from the design can be used to transport radioactive material. In addition to other requirements, both manufacturers and users of the packages must follow NRC approved quality assurance programs.

Technical Basis Supporting NRC's Performance Standards

On occasion, the adequacy of the performance standards has been challenged, with concern focused on how the standards relate to real traffic accidents. To respond to these concerns, and to provide additional technical information on the accident resistance of spent fuel packages, NRC initiated a recent study (Shipping Container Response to Severe Highway and Railway Accident Conditions, NUREG/CR-4829, published February 1987), on the relationship between the package performance standards and real accident conditions. It provides a technical basis for explaining the level of safety provided by packages meeting the standards.

The approach used is analytical: actual highway and railway (non-nuclear) accident experiences were examined to determine the conditions encountered in real accidents; computer models were then used to evaluate how a representative package designed to NRC standards would respond to the types of forces generated in those accidents. The analysis constitutes a generic and systematic evaluation of the standards.

Study results concerning the likelihood of severe spent fuel truck accidents, are briefly summarized as follows:

By applying industrial traffic accident rates to spent fuel shipments, one could project one accident in about 40 million miles of travel to cause functional cask damage, with the radiological risk remaining within the acceptance criteria previously discussed. One accident in approximately 80 million miles of travel could cause significant cask damage leading to a radiological risk slightly in excess of the acceptance criteria mainly due to thermal damage. One accident in approximately 1.5 billion miles of travel could cause a radiological hazard about 10 times the acceptance criteria. To put these results in perspective, estimates based on Department of Energy data indicate that about 40 million miles of truck cask travel would be required to transport spent fuel presently stored at reactors to a repository.

This assessment also includes an analysis that evaluates the risk to the public from a large series of shipments over time, using packages designed to NRC standards. The evaluation supplements a 1977 study ("Final Environmental Statement on the Transportation of Radioactive Materials by Air and Other Modes," NUREG-0170, December 1977), which assumed an annual shipment scenario of 1530 truck spent fuel shipments of 1570 miles each, and 650 rail shipments of 750 miles each. The annual radiological risk from accidents, which was based on conservatively assumed package releases, was estimated to be 0.0004 latent cancer fatalities per year. At this level of annual risk, one latent cancer fatality would be expected in 2,500 years of shipments at the rates described above. The more recent study referenced above, found the annual risk from accidents to be less than 1/3 of these values. These studies validate NRC's previous finding that transport risk is small and that its transport regulations are adequate.

The technical analyses discussed in the NRC studies described above, studies of other national and international bodies, full-scale accident testing of actual packages, and the radioactive material transport safety record, combine to validate a conclusion that present requirements adequately protect the public health and safety during radioactive material transport.

NRC/DOE Interactions on Transportation Matters Related to the Nuclear Waste Transportation Act of 1982 (NWPA)

The NWPA clearly established DOE's responsibility to develop, operate and maintain the transportation system required for the high-level radioactive waste disposal system. DOE will be the shipper of record for NWPA shipments. In general, neither the NWPA nor other law requires DOE to use NRC certified packaging, or follow NRC's other transportation requirements, for shipments in which DOE is the shipper. The extent to which DOE follows NRC transportation requirements for NWPA shipments is a matter of DOE policy. DOE is subject to DOT's transportation regulations and, of course, to DOE's internal transportation requirements.

NRC and DOE concluded a Procedural Agreement on Spent Fuel and High-Level Waste Transportation Packaging (48 FR 51875) for NWPA transportation on November 14, 1983. The Agreement specified transportation planning assumptions and states that "...DOE plans to use packaging that has been approved by NRC in accordance with 10 CFR Part 71 (rather than DOE-certified packaging), for DOE shipments performed under NWPA from NRC-licensed facilities to an NRC licensed repository, MRS, or interim storage facility." Since this Agreement was reached, NRC, DOE, and DOT have held periodic meetings in which transportation issues have been identified for further consideration.

With regard to transportation to NWPA facilities, NRC's review of DOE's Draft Environmental Assessments for the original nine candidate sites for the first high level waste repository included an examination of DOE's transportation analyses. NRC forwarded comments to DOE on the transportation sections. DOE has addressed our comments in the Final Environmental Assessments.

Although not required under the NWPA, DOE has prepared a Transportation Business Plan and a Transportation Institutional Plan to provide general information and guidance on the development of the NWPA transportation system. In comments to DOE staff on the Business Plan, NRC staff noted that available

NRC resources could not support simultaneous review of a large number of new cask designs. With regard to the Institutional Plan, NRC staff provided comments to clarify NRC roles described in the Plan, and suggested organizational and editorial changes.

In recent statements on NWPA transport issues, DOE states its intent to comply with all DOT and NRC regulatory requirements that are in effect at the time of shipment to NWPA facilities. We would expect DOE shipments conducted in accordance with our rules and practices to provide the same level of protection of the public health and safety as that previously described for commercial shipments.

In summary, we share your concern for safety in the transportation of radioactive materials particularly with regard to our responsibility for transport containers. From a radiological perspective, the safety record for radioactive materials transport is excellent, and an independent review by the Office of Technology Assessment, "Transportation of Hazardous Materials", July 1986, points to the fact that the NRC's regulatory program provides a high degree of public protection. The Commission is proud of this record and will continue a vigorous program of surveillance and assessment to assure that the program continues to provide this high degree of safety.

Further, we will explore opportunities to make improvements. We believe this is particularly important with the coming generation of new spent fuel casks, perhaps with new designs and materials of construction, that will be used to ship spent fuel to an MRS or a repository.

In regard to radiological emergencies, NRC serves in an advisory role whereas the primary responsibility for response rests with state and local officials. FEMA coordinates federal agency involvement in emergencies. Both FEMA and DOE conduct hazardous material training courses for state and federal personnel.

In closing, Mr. Chairman, it is our view that the roles and authorities among the agencies involved in the transportation of radioactive materials are well defined by existing statutes and subsequent agreements, and that this system provides for adequate coordination among the agencies.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

CHAIRMAN

July 7, 1987

The Honorable Alan K. Simpson
Subcommittee on Nuclear Regulation
Committee on Environment and Public Works
United States Senate
Washington, D.C. 20510

Dear Senator Simpson:

Thank you for your letter of May 27, 1987, requesting the Commission's comments on three legislative proposals: S.833, the "Nuclear Waste Transportation Prohibition Through Urbanized Areas Act of 1987", S.1008, "a bill to provide for State regulation of the transportation of high level radioactive waste," and those portions of S.1269, "a bill to improve hazardous materials transportation safety." The Commission does not support the enactment of S.1008 for reasons presented in the enclosed analysis.

Although the Commission concludes that S.833 and S.1269 do not directly impact the Commission's responsibilities, we do note with regard to S.1269 Sec 2 (8) that the NRC has issued a generic environmental assessment covering all shipments which concluded that current transportation requirements adequately protect the public health and safety. Also, the NRC recently completed an assessment of the performance of packages in accidents involving the shipping of spent reactor fuel which confirmed the Commission's decision on the adequacy of the NRC package performance standard. The NRC does not license transportation routes. Instead, the Department of Transportation (DOT) is responsible for regulating routes for the transportation of radioactive waste. (See Memorandum of Understanding, 44 Fed. Reg. 38690, June 8, 1978). Therefore, the NRC defers to the DOT's comments in this area. However, we note that Section 407 of S.1269 directs the Secretary to "make grants to the States and political subdivisions" for various purposes including the designation of routes and other matters. To the extent that either the grants contained in Section 407 of S.1269 or the authority contained in the provisions of S.833 constitute a delegation of authority to the States and other political subdivisions to exercise a veto power over transportation routes and other federal regulatory provisions, we reiterate our comments in the enclosed analysis on the similar provisions of S.1008. Otherwise, the NRC defers to the comments by the DOT and the DOE on both bills.

Sincerely,

Lando W. Zech Jr.

Lando W. Zech, Jr.

Enclosure:
As Stated

Enclosure

ANALYSIS

After reviewing S.1008, the NRC concludes that the existing federal system provides both adequate protection of public health and safety and a uniform regulatory structure for the transportation of radioactive materials. While the States and other governmental entities have important roles in this process and are naturally concerned about the safety of the transportation of high level radioactive waste and spent fuel, the NRC believes that the primary responsibility for the regulation of the transportation of this material should remain at the federal level, and that the proposed amendments to the Atomic Energy Act are not an appropriate or effective approach for state involvement in issues where uniformity is the desired objective.

The two key requirements of S.1008 are (1) to prohibit shipments of high-level waste and spent fuel not approved by the NRC, and (2) to require the NRC to establish a new process to evaluate, review the need for, and approve shipments. Essentially, the NRC takes the position that (1) the transportation of spent fuel is adequately regulated under the current regulations by the Department of Transportation (DOT), NRC, the Department of Energy (DOE), the Federal Emergency Management Agency (FEMA), as well as the States; (2) a determination of need is not required for each individual shipment, and (3) the public has an adequate opportunity to participate in the existing safety program.

There are several specific provisions of the bill which the Commission questions. First, Section 312 could be interpreted to require NRC licensing of all waste and spent fuel transportation, including waste generated through DOE activities. This interpretation would be a significant departure from present practice which allows the the DOE to transport its waste under its own authority. Moreover, under this interpretation, Section 189 of the Atomic Energy Act (AEA) might require the NRC to hold additional hearings on each new licensing action, further consuming valuable resources without appreciably increasing safety. The bill would also require the NRC to analyze alternate transportation corridors. The DOT has performed this analysis generically in its rulemaking activities and the federal courts have upheld the resulting rule. _See_ _City of_

New York v. Department of Transportation, 15 F.2d 732 (2d Cir. 1983), *cert. denied* , 104 S. Ct. 1403 (1984). The bill would also require the NRC to prepare an environmental assessment for each shipment license. This requirement appears unnecessarily duplicative because the NRC has already issued a generic environmental assessment covering all shipments which concluded that current transportation requirements adequately protect the public health and safety. *See* Final Environmental Statement (FES) on the Transportation of Radioactive Material by Air and Other Modes (NUREG-0170) (December, 1977) (enclosed). The NRC recently completed an assessment of performance packages in accidents involving the shipping of spent reactor fuel (NUREG/CR-4829), which confirmed the Commission's decision on the NRC package performance standard.

Section 314 and subsection 312(e)(1) also present problems which could be the source of additional confusion. First, under Section 314, the States could impose regulations which might conflict with the applicable NRC, DOT, DOE, or FEMA regulations in areas already preempted by federal legislation and regulation, such as the Hazardous Materials Transportation Act implemented by the applicable DOT regulations, and the NRC's rules covering advance notification. Second, subsection 312(e)(1) would require the NRC to determine that individual shipments meet all State as well as federal requirements for issuance of a license. If each state or local government entity has the ability to impose conflicting regulations on the shipment of nuclear waste, exercise of that power would create a "patchwork" of rules and regulations which would hinder the NRC's ability to determine exactly what regulations were applicable at any one time. Furthermore, this "patchwork" could hinder the ability of both the shipper and the carrier of the waste to comply with the applicable regulations. In contrast, the current regulatory process provides a uniform, national framework within which all concerned may easily and safely operate.

Additionally, Section 312(d)(1)(B) and 313 require the NRC, and the other named federal agencies, to determine the emergency response capability of corridor States, Indian tribes, and local communities as a prerequisite for any shipments. However, the bill does not require that those State and local government entities provide, acquire, or cooperate in an emergency response capability. Absent such a requirement, this provision arguably gives the State or local government entity a veto over the shipment licensing process.

Finally, the bill does not clearly specify whether its licensing requirements apply to shippers or carriers or even to both. While the NRC does not currently regulate carriers except for safeguards purposes, the NRC and the DOT have agreed that the DOT would develop carrier safety standards because of the DOT's experience and expertise in that area. The DOT has carried out this function under an inter-agency agreement. See Memorandum of Understanding, 44 Fed. Reg. 38690 (June 8, 1978).

In sum, the NRC believes that the multiple licensing requirements and environmental assessments proposed by S.1008 would impose unnecessary regulatory requirements which would not contribute to the NRC's ability to protect the public health and safety and would allow the imposition of other regulations which would conflict with current federal regulations in this area. This conflict would destroy the current uniformity in the national regulatory structure and process. Moreover, the added regulatory duties would create a substantial demand on the NRC's manpower and program resources. As a result, the NRC concludes that the legislation would consume additional resources at the federal level, and at the NRC in particular, without significantly contributing to the public health and safety. Therefore, the Commission does not support the enactment of S.1008.

Statement of

Lake H. Barrett

Office of Storage and Transportation Systems

Office of Civilian Radioactive Waste Management

U.S. Department of Energy

Before the

Subcommittee on Nuclear Regulation

Committee on Environment and Public Works

United States Senate

June 3, 1987

Mr. Chairman and Members of the Subcommittee:

I appreciate the opportunity to appear before you today to testify on the transportation of radioactive materials. I am Lake Barrett, the Director of the Division of Transportation and Waste Systems within the Department of Energy's Office of Civilian Radioactive Waste Management (OCRWM). In my remarks I will review the OCRWM transportation program, focusing primarily on policies and initiatives that pertain to the legislative proposals of S. 833, S. 1008, and S. 1269. First, however, I would like to discuss the role of my office in relation to that of other Federal agencies and State, Tribal and local governments.

Role and Responsibility of OCRWM

Under provisions of the Nuclear Waste Policy Act of 1982 (NWPA) and other Federal statutes, the transportation of radioactive waste is a responsibility shared by several Federal agencies. In addition, State, Tribal, and local governments have authorities and obligations in regulating the transport of waste. The Federal perspective is necessarily one of ensuring a transportation system that protects the welfare of the Nation as a whole. The States, Tribes, and localities have responsibilities of a more regional or local nature that affect their positions. The challenge in working together is to strike a responsible balance in ensuring a national transportation system that is safe, efficient, and equitable while fully respecting regional and local concerns.

The NWPA assigned to the Department of Energy (DOE) the primary responsibility for the development and operation of a national system for the management and disposal of spent fuel and high-level radioactive waste and created the OCRWM to carry out the associated program functions. An essential element of the prospective disposal system is the capability to transport the waste from its point of origin or temporary storage to a geologic repository. The objective of the transportation program is to ensure that activities are performed in a safe, secure, and cost-effective manner, in accordance with all applicable laws and regulations, and in a way that fosters public understanding and acceptance of program goals.

The existing DOE transportation programs for shipping noncommercial nuclear materials, centralized within the Office of Defense Programs, provides a source of expertise for operations, policy and procedures, and research and development. The OCRWM is building on this foundation, taking the additional NWPA requirements and considerations into account.

As directed by the NWPA, the OCRWM will establish a transportation system that functions within the existing regulatory system. The Department of Transportation (DOT) and the Nuclear Regulatory Commission (NRC) are the primary Federal agencies involved in the regulation of radioactive waste transportation. The OCRWM recognizes that successful implementation of its program will depend, in large measure, on conscientious compliance with the relevant regulations and orders promulgated by these agencies. The OCRWM interacts with the DOT and NRC on a regular basis to ensure that transportation activities are coordinated and that all applicable regulatory requirements will be met.

Integrated System Development

In establishing the NWPA transportation system, a program strategy that synchronizes institutional activities with technical development is being utilized. The technical program is divided primarily into three categories of effort: (1) development of the cask and related hardware in which the nuclear spent fuel and high-level radioactive wastes will be shipped; (2) acquisition of the facilities, equipment and services needed to operate the transportation system; and (3) system studies of transportation costs/risks and other factors to assist in facility-siting decisions and the definition of a safe and efficient transport system.

Complementing the technical activities, the OCRWM has initiated a strong program of institutional interactions as described in the Transportation Institutional Plan (DOE/RW-0094). A transportation communication network, whose members will participate in establishing the system for shipping waste under provisions of the NWPA, has been identified. Six major groups constitute the network: (1) Federal, State, Indian Tribal, and local governments; (2) the electric utilities; (3) the transportation industry, (4) special interest groups; (5) the media; and (6) the public at large. The interaction between the OCRWM and the other members of the network will generally fall into three categories: information exchange, involvement in the program planning process, and management of specific issues.

It is the third category of interaction -- the management of issues -- that is the focus of this hearing. Many of the concerns that are being addressed in the OCRWM program are identical to concerns that have motivated the legislative proposals contained in S. 1008, S. 833, and S. 1269. Accordingly, the remainder of my remarks will describe DOE activities and initiatives in several areas that address our mutual concerns.

Emergency Preparedness and Response.

Emergency response to transportation accidents is currently an issue of great interest, and one that is addressed in both S. 1008 and S. 1269. Without doubt, a major goal in the area of radioactive waste transportation is to ensure that those who are responding to emergency situations are well prepared to fulfill their responsibilities. The vast majority of the technical community believes that the shipping casks used in the transport of radioactive waste provide adequate protection to the public and environment, even under severe accident conditions -- and this perception is certainly supported by an excellent safety record.

The task of providing an effective response system is a shared one. State and local governments have primary responsibility for implementing measures at the scene of a accident to protect life, property, and the environment. In addition, considerable Federal assistance is available to support their efforts. The Federal Emergency Management Agency (FEMA) is responsible for coordinating the civil emergency planning, management, mitigation, and assistance functions of the Federal agencies.

The DOE component of the Federal response capability has the primary responsibility to provide technical personnel and equipment to perform radiation monitoring and evaluation activities in the event of any accident involving radioactive transportation. DOE has eight emergency response regions nationwide supported by numerous experts ready to respond to accidents. This capability can be mobilized within two hours of notification and at a scene anywhere in the continental United States within several additional hours. In the interim, expert assistance can be provided to the on-scene responders via telecommunication.

The DOE has also been active in the area of emergency response training. Emergency response workshops are conducted around the country on a regularly scheduled basis. Training includes first responder actions related to both general hazardous and radioactive material shipments. To date, over 5,000 people in 39 states have received DOE emergency training.

To reinforce and enhance existing emergency preparedness and response capabilities, a number of additional activities are planned:

- continued cooperative efforts of the FEMA, the DOE, and other Federal agencies to provide written guidance to States, Indian Tribes and local governments for emergency response planning;

- working with State, Indian Tribes, and local governments to delineate emergency response duties and promote the development of coordinated emergency response plans;

- the development of a comprehensive summary of the Department's emergency response requirements and procedures; and

- the review of emergency response capabilities and needs at the State, Tribal, and local levels preliminary to appropriate OCRWM responsive actions.

Advance Notification of Shipments

Another issue raised in the proposed legislation (S. 1008, Section 315 (4)) relates to the imposition by States and Indian Tribes of regulations on advance notification of shipments.

The DOE has recently approved a new policy on prenotification of radioactive shipments identical to the requirements for NRC licensees. The DOE will now provide 7-day advance written notification for all unclassified shipments of spent fuel and high-level radioactive waste. This notification will be provided to each State along the shipping route. Procedures for this new policy are being finalized and will be implemented in the near future. In addition to advance notification, the DOE is also developing a real-time satellite tracking system which will provide shipping information including maps displaying shipment locations, bill of lading information, and emergency response actions.

Designation of Alternate Routes

The proposed legislation (S. 1008, Section 315 (5)) also calls for State and Indian Tribal designation of alternate routes. Under existing DOT regulations for highway route controlled quantities of radioactive materials, carriers must use preferred highway routes selected to minimize the time in transit. Preferred routes consist of (1) an Interstate System highway, with the use of an Interstate System bypass or beltway around cities when available; and (2) alternative routes selected by a "State routing agency in accordance with DOT guidelines." Indian Tribal authorities having police powers to regulate and enforce highway-routing requirements are included in the definition of "State routing agency" and may designate alternative highway routes within their lands. Route designation by State and Tribal governments must be preceded by substantive consultation with any other affected jurisdictions (including local jurisdictions) to ensure the consideration of all impacts and the continuity of designated routes.

Therefore, under DOT regulations, the State and Indian Tribes already have the authority to designate alternatives to the Interstate highways for the transportation of spent nuclear fuel and high-level waste. Upon request, the OCRWM will provide technical assistance to States and Indian Tribes for the evaluation and designation of routes through such mechanisms as--

- Providing access to a highway-routing model maintained by the Oak Ridge National Laboratory,
- Providing access to DOE computer codes to estimate the risk associated with waste transportation, and

- Providing access to DOE computer codes developed to derive transportation-cost estimates.

The OCRWM will work with States and Indian Tribes on both an individual and regional basis to provide access to future codes developed for transportation analyses and to determine other forms of technical assistance that may be appropriate.

Inspection and Enforcement

The OCRWM has frequently encountered concerns regarding inspection of radioactive shipments. When conducting shipments of radioactive waste (generated in national defense or R&D activities), the DOE performs its own inspections of the cask and transportation vehicles. In many instances, DOE inspections are supplemented by DOT and NRC inspections. The enforcement procedures of the DOE are specified in contractor agreements and include the suspension and termination of contracts to penalize contractors for noncompliance.

In determining procedures for inspections of shipments of spent nuclear fuel and high-level waste to a repository, the OCRWM is looking at several initiatives. One option that could significantly enhance operations is the development of reciprocal inspection arrangements among States and Indian Tribes. Pursuant to this objective, the OCRWM has signed a cooperative agreement with the Commercial Vehicle Safety Alliance (CVSA), an organization of State and Provincial governmental agencies in the United States and Canada dedicated to improvement of commercial vehicle safety. Under provisions of this agreement, the CVSA is developing proposed uniform safety inspection criteria for motor vehicles used to transport spent nuclear fuel to a NWPA facility. The CVSA has established a similar system for uniform, reciprocal inspections of highway shipments by general motor carriers, and related standards have now been adopted by over 40 States.

Conclusion

In summary, I believe the Nation is best served by a national, uniform, comprehensive regulatory system for the transport of radioactive materials. Assurances should be made, however, that State, Tribal, and local concerns are appropriately accommodated within that framework.

Mr. Chairman, this completes my statement for the record. I would be happy to respond to any questions concerning either the OCRWM program or how our activity relates to the proposed legislation being addressed in this hearing.

STATEMENT OF

JILL E. LYTLE

DIRECTOR, OFFICE OF DEFENSE WASTE AND TRANSPORTATION MANAGEMENT

U.S. DEPARTMENT OF ENERGY

BEFORE THE

SURFACE TRANSPORTATION SUBCOMMITTEE

COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

U.S. SENATE

MAY 12, 1987

Good afternoon, my name is Jill Lytle and I am pleased to be here today as the Director of the Department of Energy's (DOE) Office of Defense Waste and Transportation Management to present testimony on behalf of the DOE. My Office is responsible for developing and promulgating policies and procedures for transporting DOE's radioactive and other hazardous materials. We also direct the DOE-wide transportation and traffic management support programs for the movement of all material with emphasis on hazardous, radioactive, and explosive material (excluding nuclear weapons and their components). We represent the Department in activities involving transportation operations and traffic management with the carrier industry, carrier associations, Federal and State regulatory authorities, and other Government agencies.

The Department of Energy, in its current programs, uses radioactive materials in support of its national defense and research and development activities, and is a major shipper of radioactive materials. DOE shipments are transported through almost all 50 States in both Government and commercial vehicles via air, highway, rail, and water modes. Under DOE programs the radioactive materials are transported from uranium ore mines to processing facilities where the uranium is enriched and prepared as reactor fuel. Fresh fuel is shipped to nuclear reactors for research in energy technologies and to produce special nuclear materials for defense purposes. Byproducts are shipped to research laboratories, industrial plants, and medical institutions. Radioactive waste and spent fuel are transported to interim storage and disposal sites.

The Department of Energy supports the reauthorization of the Hazardous Materials Transportation Act (HMTA). We believe the public is best served by a uniform system of Federal regulations. State and local jurisdiction initiatives can also be accommodated in such regulations.

We believe the Subcommittee's approach of beginning its work by considering the Transportation of Hazardous Materials report issued by the Office of

Technology Assessment (OTA) gets quickly to the issues. Many of the findings in the OTA report parallel conclusions reached in similar or related studies conducted by the DOE. We agree with the OTA's conclusions on the nuclear materials shipments, "OTA finds that technical evidence and cask performance in service indicate that NRC performance standards yield spent fuel shipping cask design specifications that provide for a very high level of public protection--much greater than that afforded by any other hazardous materials shipping activity." In over 40 years the Department has been shipping radioactive materials, there has not been a death or injury in accidents due to the radioactive nature of the cargo. Be assured we will work to continue this exemplary safety record. OTA concluded for radioactive materials in transport, "... the probability of an accident severe enough to cause extensive damage to public health and the environment caused by radiological release from a properly constructed cask is extremely remote."

We undertake very stringent precautions to minimize and eliminate risks in transporting these radioactive materials. DOE shipments are packaged and transported in accordance with Federal regulations contained in Title 49, Code of Federal Regulations. In addition, DOE has adopted the packaging standards of the Nuclear Regulatory Commission (NRC). These regulations and standards are implemented through the issuance of DOE safety and operational directives which apply to all DOE facilities. We will continue to maintain a high level of safety by strict compliance with transportation and packaging regulations.

All shipments of radioactive materials, whether they are private or Government-owned, are packaged and transported according to carefully developed Federal regulations that protect the public and transportation workers from radiation. These regulations cover a broad range of activities including packaging, driver training, shipment documentation, and more. The risks associated with transporting radioactive materials are primarily reduced by a combination of: (1) package design and (2) limitations on the contents of a package.

Radioactive material packaging is determined by the quantity limits, type, and form of the radioactive material to be shipped. Most radioactive material shipments are packaged in either Type A containers or Type B containers. Generally, Type A radioactive material packages are used for shipments that present very little hazard due either to their small quantity or limited radioactive concentration. These containers are designed to contain and protect the contents during normal shipping activities. Examples of these items include radiopharmaceuticals for single treatments, watch dials, smoke detectors, and "exclusive-use" shipments of natural uranium or uranium metal.

Any radioactive material shipment that exceeds the limits of Type A package specifications must be shipped in a Type B package. Type B packages carry higher concentrations of radioactive materials. For this reason, a Type B package must be able to withstand both normal shipping conditions and hypothetical accidents. Type B containers may be used to transport such items as spent reactor fuel or high-level radioactive waste. Type B containers range in size from small packages weighing only a few pounds to spent fuel casks weighing more than 100 tons.

By design, the unique Type B radioactive materials container provides the primary level of protection in assuring public health and safety. Spent fuel casks used by DOE are designed to ensure the contents are safely contained even in the event of an extraordinary transportation accident. Rigorous design analysis and testing programs have repeatedly demonstrated cask survival even when subjected to fire, collision, puncture, or water immersion.

Highway route-controlled quantities are higher activity Type B shipments. When transporting a highway route-controlled quantity shipment, the carrier must follow established and approved routes as specified by Department of Transportation (DOT) regulations. Drivers of vehicles transporting highway route-controlled quantities receive special training and are required to carry a card certifying the date of that training. Training includes instruction in the hazardous materials transport regulations, the properties and hazards of radioactive materials, and emergency procedures. Drivers must receive updated training every 2 years.

DOE wishes to comment on a number of issues of concern to both DOE and the Subcommittee:

Highway Routing

The routing of hazardous material shipments is a controversial issue facing all hazardous materials shippers. It is particularly difficult for radioactive materials shipments because there is a public perception that these are more dangerous than other hazardous materials. Quite the opposite is true.

Under existing procedures, the designated motor carrier of spent fuel is permitted to select from routes identified as "preferred" by the DOT or the States. A preferred route is an interstate system highway, including interstate beltways around major cities; or an alternative route selected by a State routing agency in consultation with other affected States and local jurisdictions and in accordance with the DOT guidelines. The designation of alternative routes is assigned to the States because they have more knowledge of events that may affect local conditions than do Federal authorities. At the request of the State, the DOE will assist, as practicable, in the identification and evaluation of alternative routes in accordance with DOT guidelines. As a shipper, DOE assures its carriers comply with the DOT routing regulations including adherence to State designated alternative routes.

DOT's routing regulations for highway route-controlled quantities of radioactive materials have been upheld in the courts and we believe have served the national interest in the safe transportation of these materials. It balances the need for uniform Federal regulation with due consideration of State and local concerns.

Prenotification

DOE has recently approved a new policy on notification of radioactive shipments similar to the requirements for NRC's licensees. DOE will now provide 7-day written prenotification for all unclassified shipments of spent fuel and high-level waste. This notification will be provided to each State along the shipping route. Procedures for this new policy are being finalized and will be implemented very soon.

This new policy is an example of DOE's response to States' needs for information about these shipments.

Emergency Response and Preparedness

The Department of Energy maintains an effective nationwide emergency preparedness capability. Since the 1950's, DOE and its predecessor agencies have provided emergency radiological advice and assistance to State and local Governments, private industry, other Federal agencies, and the general public. DOE has established and maintained this capability through actual emergency response operations as well as extensive training and exercise programs. DOE's emergency response capability includes people and equipment. These people include health physicists, nuclear engineers, transportation and packaging specialists, and public information officials. We have specialized materials handling and communications equipment, radiation detection instruments, robotics, and decontamination equipment. This capability can be mobilized within 2 hours of notification and at the scene in the continental United States within hours. DOE has established regional coordinating offices for radiological assistance with corresponding geographical areas of responsibility. Once a DOE emergency response team is requested and on the scene, a determination on package integrity can usually be made very quickly. After package integrity has been confirmed, an accident cleanup may begin in normal fashion. We should note that a Type B package has never released its contents in an accident. If any radiological problems are encountered, DOE can apply its vast technological resources to rectify the situation.

DOE is very supportive and has taken many initiatives in emergency response training. DOE conducts emergency response workshops around the country on a regularly scheduled basis. Training includes first responder actions on both general hazardous and radioactive materials shipments. Topics include regulations, shipping requirements, description of radioactive materials and their hazards, what to do at the accident scene, radiation detection equipment, and how to mobilize Federal assets to assist local first responders.

DOE is expanding the number and geographical distribution of these training workshops. So far, over 5,000 people in 39 States have had this training. We are also developing ways of reaching an even broader audience with new training materials such as video tapes, printed material, and "Train-the-Trainer" courses. Again, the emphasis is to control the accident scene and mobilize State and Federal assets if needed.

DOE is also taking strong initiatives in assisting State and local emergency response capabilities. Recent efforts include current development of a real-time satellite tracking system which will include maps displaying shipment locations, bill of lading information, and emergency response actions.

Coordination Among Federal Agencies

The Department of Energy is deeply involved in coordinating radioactive materials transportation activities within the Federal system. DOE shipments are made in accordance with all applicable Federal regulations. Our Type B packagings are designed to the strict standards of the NRC. The implementation of these regulations demand a high level of cooperation and coordination among the agencies. Regular meetings at a management level are held to discuss issues and problems. Staff interactions are routine. We have also strongly supported DOT regional workshops on radioactive materials transportation issues. Such workshops provide a beneficial exchange of information between regulators, shippers, and State and local representatives.

Public Information

An important DOE program is the development and dissemination of accurate information to support:

- Training for shipment and response to emergencies for radioactive and other hazardous materials;
- Congressional, State, tribal, and local Government liaison to enable officials to make informed decisions on regulations and legislation affecting the flow of hazardous materials in commerce; and,

- Open exchange between the public and DOE to describe the Federal role in energy programs and related transportation activities.

The need for these activities has been recognized by the OTA report. The report states, "OTA has identified four paramount policy issue areas for congressional consideration. . .[one of which is] increased availability of information about the transportation of hazardous materials, including spent nuclear fuel."

The public has a genuine concern about hazardous materials shipments, which can be addressed through understandable information. DOE provides a wide variety of information including the general nature of the materials being shipped, the necessity of the shipments, any dangers involved and the proven methods used to mitigate those dangers, the precautions taken, the regulations affecting radioactive and other hazardous materials transportation, and the historical safety record.

This information is provided through a variety of media including booklets explaining the basis for packaging and transporting radioactive materials. Films are also available which describe a highway shipment of spent fuel and the procedures involved in transporting radioactive materials. Fact sheets are also available on a variety of specific topics.

We feel we are making significant progress toward educating the public on the procedures developed for packaging and transporting radioactive materials. We will continue to place the highest priority on thoughtfully and effectively responding to the public concern about all hazardous materials shipments.

Conclusion

The Department of Energy supports a national uniform Federal system of regulating hazardous materials transportation as defined in the Hazardous

Materials Transportation Act. These regulations are the best way to assure public health and safety and protection of the environment. While our past safety record is good, we will continue to emphasize doing everything necessary to assure the continued safe transport of the materials. Thank you for your time and the opportunity to provide you these comments.

TESTIMONY OF

ROBERT W. BISHOP

SPECIAL COUNSEL, NORTHEAST UTILITIES

ON BEHALF OF

ELECTRIC UTILITY COMPANIES' NUCLEAR TRANSPORTATION GROUP

AMERICAN NUCLEAR ENERGY COUNCIL

ATOMIC INDUSTRIAL FORUM

EDISON ELECTRIC INSTITUTE

BEFORE THE NUCLEAR REGULATIONS SUBCOMMITTEE

OF THE

SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

JUNE 3, 1987

TESTIMONY OF
ROBERT W. BISHOP
SPECIAL COUNSEL, NORTHEAST UTILITIES

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SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
JUNE 3, 1987

I am Robert W. Bishop, Special Counsel to the Executive Vice President - Engineering and Operations of Northeast Utilities. Northeast Utilities' system companies provide electric service to almost a million customers in Connecticut and Massachusetts. As part of our diverse electric supply system, we have an ownership interest in and are responsible for the operations of the four nuclear power plants located in Connecticut. In order to operate those plants, it is crucial that we be able to transport radioactive materials to and radioactive waste from those plants in a safe and efficient manner.

My testimony is presented on behalf of the Electric Utility Companies' Nuclear Transportation Group (the "Nuclear Transportation Group"), the American Nuclear Energy Council ("ANEC"), the Atomic Industrial Forum ("AIF"), and the Edison Electric Institute ("EEI"). I am chairman of the Nuclear

Transportation Group, which consists of 33 utilities responsible for 97 nuclear power plants in the United States. The Nuclear Transportation Group was formed in 1978 because of a growing concern among utilities about actions being taken by state and local governments that could hamper or preclude our ability to safely and efficiently transport nuclear fuel cycle materials. The Group has been able to facilitate communications among utilities so that we can learn from each others' shipping experiences and to ensure that common concerns are brought to the attention of appropriate federal and state agencies. The Nuclear Transportation Group also has taken an active role, on behalf of the utility industry, in assisting the U.S. Department of Energy ("DOE") in its implementation of the transportation-related provisions of the Nuclear Waste Policy Act of 1982 ("NWPA").

ANEC represents over 100 organizations having an interest in nuclear energy, including investor, public and cooperatively-owned utilities, manufacturers, architect-engineers, and various firms involved in the nuclear fuel cycle. AIF is an association dedicated to the development of the peaceful uses of atomic energy; its approximately 400 U.S. members include electric utilities, as well as manufacturers, architect-engineers, constructors and consultants. EEI is the national association of investor-owned electric companies; its members serve approximately seventy-three percent of all ultimate consumers of electricity in the nation.

The purpose of this hearing is to address the transportation of radioactive materials, of which about four percent of all packages shipped annually are associated with the generation of electricity at commercial nuclear power plants. The utilization of radioactive materials by private industry for the production of electric power, medical treatment and diagnosis, research and a variety of industrial processes necessarily produces radioactive waste that must be carefully handled, stored, transported and disposed of. Congress recognized the importance of transportation in its passage of the NWPA by explicitly assigning that responsibility to the DOE. It is our opinion that legislative changes are not required to ensure that radioactive materials can be shipped safely. Nevertheless, the anticipated volume of shipments that will occur under the NWPA has caused concern over whether the existing regulatory framework that will govern these shipments is adequate to ensure safe transportation. I will provide the nuclear industry's perspective on the DOE's implementation of its transportation program under the NWPA.

Transportation Under The NWPA

It is crucial to DOE's being able to carry out its statutory mandate under the NWPA that DOE develop a transportation system that meets two goals. First and foremost, the transportation system must be capable of transporting spent nuclear fuel from each individual reactor to a federal facility in a safe, efficient and cost-effective manner such that it earns public confidence and therefore acceptance. Second, DOE must develop the transportation system on a schedule so that it is available when needed to satisfy the NWPA's requirement that the DOE begin shipment of spent fuel from commercial nuclear power plants in 1998. Each of these goals is a formidable task in and of itself. I can report that DOE has made significant progress in meeting these goals and there is every indication that it will be able to meet its NWPA transportation-related responsibilities.

Although not specifically required to do so by the NWPA, the DOE has published, after soliciting and receiving public comments, a Transportation Business Plan, a Transportation Institutional Plan, and numerous issue-specific discussion papers, all of which will eventually be assimilated into one comprehensive plan that integrates the various aspects of the DOE's transportation program. The formulation of these documents has enabled DOE to recognize and respond to the needs and concerns of governmental entities, the industry, and the public, and has facilitated the timely development of DOE policy with respect to the numerous transportation issues. The DOE also has utilized workshops and meetings to further enhance its interaction with all entities affected by the development of its transportation program. As a person who has attended many of these meetings and workshops, I can assure you that they have served as an excellent vehicle for fostering communication between DOE and all affected entities, which will hopefully lead to ever-improving cooperation. Progress also has been made in a very tangible sense in that the DOE has issued a Request for Proposals for the casks to be used to transport the spent fuel from the individual reactors, and contracts are expected to be awarded shortly. Thus, DOE has taken significant steps forward in developing its transportation program and has involved interested parties in virtually every step of the process.

DOE should be commended for the progress it has made so far in developing its transportation program. However, care must be taken to ensure that the transportation aspects of the program are appropriately synchronized with the development of the rest of the program. Accordingly, there is a need for DOE to be flexible in developing the transportation program in the face of changes in the overall program schedule. This need for flexibility is especially important with respect to the formulation of DOE policy on major transportation issues. For example, the nature of some issues is such that it is important for DOE to promulgate its policy on those issues early so it can serve as a basis for planning long before the implementation of those policies is appropriate. A concrete example of such an issue is emergency response preparedness and training, which is discussed in more detail below. Many state and local officials cite their concerns about emergency response as a justification for a variety of actions on their part with respect to radioactive materials transportation. Several states have imposed fees on all shipments of spent fuel through their jurisdictions to cover the costs of their inspection and enforcement programs, and/or state-provided escorts. In cases such as this, DOE's failure to make a policy decision or take a position on the appropriateness or necessity of state actions could hamper DOE's ability to make and implement a policy decision at a later date. For example, if numerous states were to enact fees to fund their own inspection and emergency response programs, the states might be very reluctant to abandon or modify such programs several years from now because of a DOE policy decision at that time establishing that such extensive state programs are not necessary to ensure public safety.

Transportation Regulatory Environment

As a shipper of radioactive materials under the NWPA, DOE must comply with the regulations issued by DOT and NRC pursuant to their express statutory authority under, respectively, the Hazardous Materials Transportation Act ("HMTA") and the Atomic Energy Act of 1954 ("AEA"), as amended. These regulations cover virtually the entire field of radioactive materials transportation and preempt inconsistent state and local laws and regulations, pursuant to the Supremacy

Clause of the U.S. Constitution. Regulations of both the NRC and DOT are consistent with the international regulations governing radioactive materials transportation promulgated by the International Atomic Energy Agency. I think it bears emphasis that under this comprehensive regulatory regime, more than 6,000 shipments of commercial spent fuel have been made in the United States to date, and many thousands of shipments have been made internationally, all without radiological incident. Yet this unparalleled safety record is often forgotten due to the heightened concern over spent fuel transportation at the state and local levels caused by the perceived prospect of increased numbers of shipments under the NWPA. I cannot overemphasize that the existing regulatory regime has proven to be adequate to ensure that the general public and the environment are properly protected from the risks inherent in the shipment of spent fuel. As noted, the DOE is a shipper of radioactive materials under the NWPA - it is not a regulator. Regulation of transportation is the responsibility of the DOT and the NRC.

We believe that DOE should not take any action that interferes with the comprehensive federal regulatory system. For example, if DOE concludes, on the basis of its workshops or studies, that NRC physical protection or prenotification requirements should be modified, it should consult with NRC through the agencies' Memorandum of Understanding to ensure that its concerns are considered and appropriately addressed by NRC. The DOE should work in a similar manner with the DOT through its Memorandum of Understanding with that agency. However, although DOE should not attempt to supplant NRC and DOT authority, there may be areas where it is appropriate for DOE, as a shipper, to take certain actions or impose certain requirements on its service contractors that, while not expressly mandated by NRC or DOT regulations, are consistent with and complement the federal regulatory regime. For example, while DOE must conform to NRC cask design standards in developing casks for NWPA shipments, DOE may decide to require that certain other features be added to those casks, for example, to facilitate decontamination procedures. It would be appropriate for DOE to do so if the additional features would improve the safety, efficiency and cost-effectiveness of NWPA shipments.

Industry Involvement

The industry believes that it is crucial that the DOE interact with the nuclear industry as early and as often as possible during the development and implementation of the transportation program under the NWPA. The utility industry is not only the customer whose needs must be addressed by the DOE in developing its transportation program, but the utilities, as well as manufacturers of spent fuel shipping casks and others in the nuclear industry, also have technical expertise in the handling, loading and shipping of spent fuel that should be utilized by the DOE. Recognizing this, the DOE has solicited our advice and has been generally responsive to our concerns. For example, the DOE has invited industry representatives to attend its Transportation Coordination Group meetings, which are utilized by DOE as a means of bringing state and local representatives up to date on various aspects of the transportation program and for responding to their questions and concerns. The DOE also has modified its Transportation Business and Institutional Plans, where DOE has deemed it appropriate, in response to extensive comments of the utility industry and others. This atmosphere of cooperation and mutual assistance between DOE and the utility industry mirrors a similar dialogue that DOE has undertaken with state, local, and tribal governments and various interest groups, and has proven to be valuable.

Cask Design

The containers used to transport spent fuel--generally called "casks"--are licensed by the NRC and must meet stringent criteria designed to ensure that the casks can withstand severe accident conditions without a release of their contents. No other hazardous materials are shipped in containers that are designed to be accident-resistant. As noted previously, these casks are designed pursuant to criteria which are consistent with those developed by the International Atomic Energy Agency, which has resulted in thousands of safe shipments both nationally and internationally.

While it is possible to hypothesize a transportation accident that could result in a breach of a cask and the release of radioactive material, both the shipment experience to date and the design of the NRC-licensed casks used to transport spent fuel suggests that the risk, measured in terms of the probability times consequences of such an accident, is extremely small. It should be noted in this regard that spent fuel is a dry, solid material that is shipped dry. Thus, in the extremely unlikely event of an accident of sufficient force to breach or puncture a cask, there is no possibility of a spill or leak, as those terms are commonly used. Nor can it explode. As the recent Office of Technology Assessment ("OTA") Report, Transportation of Hazardous Materials, states, "OTA concludes that the probability of an accident severe enough to cause extensive damage to public health and the environment caused by radiological release from a properly constructed cask is extremely remote."

Nor would the consequences of even a deliberate sabotage event be catastrophic. A Sandia National Laboratories' study concluded, based on a simulated sabotage attack in a densely-populated urban area that penetrated the cask, that only .0006 percent of the cask contents would be released and the expected public health consequences would be no immediate fatalities and 0.2 latent cancer fatalities over the next thirty years. (Note: It is estimated that approximately 250,000 other cancer fatalities would develop in that population from other causes over the same time period.)

The NRC recently released a study conducted by the Lawrence Livermore National Laboratory which determined that there was virtually no likelihood for significant release of radioactive materials during the shipment of spent fuel by truck or rail from commercial nuclear power plants in the United States using casks that meet the NRC design criteria, and that the risk to the general public from severe transportation accidents is much smaller than previously estimated. The study concluded that the expected radiological consequences from the shipment of 3000 metric tons of spent fuel per year--the amount likely to be transported annually from nuclear power plants across the country to a geologic high-level waste repository--is one latent cancer facility every 7,500 years, rather than the previous estimate of one latent cancer fatality every 2,300 years. This study is based on data from histories of actual highway and rail accidents involving shipments of hazardous materials (not including radioactive materials) and confirm that the regulatory standards for cask strength and integrity provide adequate protection from the forces that have occurred in actual transportation accidents. This study used actual case histories of transportation accidents that did not involve high-level radioactive material shipments because no accident has ever occurred in which the radioactive contents of these casks were released.

The DOE has estimated that it will need to make approximately 1000 shipments of spent fuel per year in order to carry out its responsibilities under the NWPA to transport spent fuel from each licensed reactor site to the appropriate federal facility for storage or disposal. All of these shipments will be made in NRC-licensed casks. As I noted previously, the DOE will be awarding contracts shortly for the development of a new generation of casks. While these casks will be required to meet NRC criteria, they are expected to have a larger payload capacity than the current generation of casks and therefore will enable DOE to reduce the required number of shipments. DOE also intends to further reduce the required number of shipments by placing primary reliance on the use of the rail mode, because rail casks have a much larger payload capacity than truck casks.

Although 1,000 shipments per year is a significant number of shipments, it does not represent a significant proportion of the approximately 100 million packages of hazardous materials shipped annually in the United States. Nor does it represent an unprecedented volume of commercial spent fuel shipments because, on average, there have been about 300 shipments of commercial spent fuel each year in the United States over the last twenty years.

ROUTING

Although the major likely routes upon which the spent fuel shipments will take place cannot be determined until the federal facilities are sited, the routes that will be used must conform to the requirements of the HMTA and the regulations promulgated by DOT pursuant to that authority. The DOE's highway routing rule, known as "HM-164", requires the use of preferred highway routes for shipments of spent fuel and other high-level radioactive materials. Preferred routes consist of the federal interstate highways, including beltways or bypasses around urban areas when available. However, the rule further provides that states may designate an alternate preferred route for shipments within their jurisdictions if they do so in accordance with the procedures set forth in the rule, which are intended to protect public health and safety by giving the states the opportunity to modify preferred routes to take account of local conditions. Thus, the rule provides a uniform framework for the highway routing of spent fuel, yet it provides the States with an opportunity to make an appropriate exception to the general requirements if they conclude, based on site-specific factors, that an alternate route would be preferable from a public safety standpoint. In so doing, States are required to consult with effected localities and neighboring states to ensure the continuity of routes.

The legislative history of the HMTA establishes that Congress intended to preclude a multiplicity of state and local regulations, exactly the types of varying and conflicting regulations that now exist. OTA has estimated that there are now approximately 650 different state and local restrictions or bans on radioactive material transportation. The unfortunate but all too frequent result of these restrictions is to divert shipments around one state or locality and thereby potentially increase the overall public safety risk in another state or community. The national public interest is not being well-served by such actions.

Although the DOT clearly has the statutory authority to promulgate a similar routing rule for rail shipment of radioactive materials, it has decided that such a rule is neither necessary nor appropriate to enhance public safety. Rail routing decisions traditionally have been made by the shippers and carriers, taking into consideration, among other things, the quality of the track and the number of required interchanges. If DOE, in planning for shipments under NWPA, concludes that a rail routing rule would enhance the safety of such shipments, it can consult with DOT pursuant to the Memorandum of Understanding executed between the two agencies to determine whether a rule-making proceeding should be initiated by the DOT. However, contracts between DOE and the rail carriers are the likely mechanism by which rail routes to be used for particular shipments campaigns would be addressed, if circumstances require. Similarly, if DOE determines that the circumstances of a particular movement require that the rail carrier provide some type of service features above those normally required to ensure safe transport, DOE can address this concern in its contract with the rail carrier. This is the approach that has been taken by utilities that have engaged in shipping campaigns, and it has proven to be an effective mechanism to address movement-specific issues. In any event, we do not support the promulgation of regulations or institution of practices that require or permit carriers to impose any service features on shipments of spent fuel unless such features are technically justified as necessary to ensure safe transportation.

Emergency Response Preparedness and Training

We believe that a significant amount of state and local concern with respect to radioactive materials transportation is based on a lack of knowledge about the level of state and local emergency response preparedness and training that is necessary to ensure safe transport, the extensive programs that exist at the federal level, and DOE's intentions and capabilities with respect to spent fuel transportation emergency preparedness under the NWPA.

With respect to the subject of emergency response preparedness, although state and local personnel will be first on the scene when an accident occurs during the transportation of radioactive materials, extensive backup assistance is available from the federal government. Pursuant to the Federal Radiological Emergency Response Plan, published by the Federal Emergency Management Agency ("FEMA") in November 1985 (50 Fed. Reg. 46, 542), the emergency response resources of the participating federal agencies (which include DOE, DOT, and NRC) are coordinated and will be made available upon request. Accordingly, it is neither necessary nor desirable for states and localities to independently develop their own emergency response programs specifically focused on radioactive materials transportation.

Turning to the more specific topic of the training of state and local personnel to respond to emergencies occurring during the transportation of radioactive materials, such training should be part of a comprehensive effort to ensure that first responders are trained properly to respond to all accidents involving hazardous materials, and should not be focused exclusively on radioactive materials. The cognizant federal agencies, including FEMA, DOE, DOT and NRC, could and should coordinate their efforts and play a dominant role to ensure that training at the state and local level is adequate and uniform, which we believe will enhance safety.

A declaration by DOE in the form of a policy statement that it intends to develop and implement a comprehensive, reliable emergency response capability, that states and localities could be confident they can rely on, should help to clarify to these officials that they do not need to develop their own independent emergency response teams of experts—prepared to respond to potential spent fuel transport accidents. At a minimum, such a policy statement by DOE would assist those officials who believe their constituents' interests are best served by placing primary reliance on a demonstrated federal capability for responding to nuclear transport accidents.

Conclusion

In developing a transportation program to carry out its responsibilities under the NWPA, DOE is not acting in a vacuum. Significant numbers of shipments of spent fuel have taken place, both nationally and internationally, over the last thirty years in a safe and efficient manner. The exemplary safety record for these shipments is the direct result of a comprehensive regulatory regime and the extreme care taken by shippers and carriers of these materials. Significant changes to the current regulatory system governing radioactive materials transportation are not necessary to ensure that NWPA shipments are made in a safe, efficient, and cost-effective manner. DOE is exploring, in an appropriate manner through consultation with all interested parties, whether safety would be enhanced by additional regulation, and has set up mechanisms for interacting with the DOT and NRC if it reaches such a conclusion.

Although the regulatory system that will govern NWPA shipments has been in place for many years, DOE must develop and implement a business plan for carrying out its responsibilities, and the institutional framework necessary to support those activities. DOE has made significant progress in both these tasks. Moreover, DOE is to be commended for its efforts to involve all parties interested in the development of its transportation program in the process. We fully expect DOE to continue to fulfill its obligations under the NWPA for developing a transportation program to safely, efficiently and economically transport spent fuel and high-level waste to the appropriate federal facilities.

TESTIMONY OF THE ENVIRONMENTAL DEFENSE FUND BEFORE THE SENATE ON ENVIRONMENT AND PUBLIC WORKS, SUBCOMMITTEE ON NUCLEAR REGULATION

Washington, D.C.
June 3, 1987

Melinda Kassen
Staff Attorney

TESTIMONY OF THE ENVIRONMENTAL DEFENSE FUND BEFORE THE SENATE ON ENVIRONMENT AND PUBLIC WORKS, SUBCOMMITTEE ON NUCLEAR REGULATION

Washington, D.C.
June 3, 1987

Good afternoon. As the staff attorney for the Rocky Mountain Regional Office of the Environmental Defense Fund, I appreciate this opportunity to address the subcommittee on the issue of nuclear waste transportation.

I want to start by telling you a history. The accident which would have turned this history into a catastrophe did not happen, but unfortunately, the container involved, the amounts of plutonium it carried, the routes it traveled and the design miscalculations which were made are all true. The point of this history is that although the people of the United States have been spared the consequences of an accident involving a release of radioactivity, it is not because the government runs a technically unimpeachable program, but rather because, at least so far, we have been lucky.

The LLD-1 is a container weighing less than 150 pounds which is used to transport up to 450 pounds of plutonium by plane and truck. Since 1970, there have been at least 130 truck shipments using the LLD-1, each truck carrying up to 30 containers. In 1975, the Department of Energy (DOE) sought to have the Nuclear Regulatory Commission (NRC) certify the LLD-1 for use by shippers other than DOE, but the NRC responded with questions about the container's structural strength and seal, instead of with approval. 1/

In 1979, due to a finding that the container might leak its powdered plutonium oxide cargo in an accident, DOE limited LLD-1 shipments to solid plutonium, which, although it burns on contact with the air, poses far less of a hazard than the powdered plutonium oxide which may be this lethal substance's most dangerous form. DOE also conducted a new series of drop tests with the LLD-1 during which its support frame collapsed. 2/ In response to that information, NRC questioned whether, in an accident involving a crash and fire, enough frames would buckle that nuclear criticality would result. 3/ Without responding to NRC's questions about structural strength or possible criticality, DOE terminated further NRC review of the LLD-1 in 1983. 4/ Nonetheless, DOE continued to make shipments in the LLD-1 until at least 1984.

Why is this important? The consequences of a serious accident involving a truck loaded with LLD-1's would be enormous. In a 1979 NRC study of worst case scenarios, it found that a credible extreme accident could result in the release of 15% of the contents of one LLD-1, or one kilogram of plutonium. Such an accident, if it occurred in a major urban area, would lead to thousands of latent cancer fatalities and billions of dollars of damage from contamination. 5/ Yet, because these are DOE shipments, they are in essence unregulated under the Hazardous Materials Transportation Act. The people of New York cannot keep the LLD-1 out of Manhattan.

HOW IS IT THAT THE UNITED STATES ALLOWS THE USE OF DEFECTIVE PACKAGES FOR THE TRANSPORT OF THE MOST DANGEROUS SUBSTANCE EVER CREATED?

The regulatory program for ensuring safety of nuclear materials transportation is fragmented among federal agencies, with the result that regulation is inconsistent, e.g., between modes of transport or based on who is shipping, and there are serious regulatory gaps.

For example, NRC has the responsibility of ensuring the safety of shipping container, or cask, designs used by commercial shippers of high level nuclear waste, or other large quantities of nuclear materials. However DOE, the nation's largest shipper, is not subject to NRC certification. Pursuant to regulations adopted by the Department of Transportation (DOT) under the Hazardous Materials Transportation Act, all DOE needs to do is certify that its casks meet standards equivalent to the NRC's, and it can ship. 6/ Unfortunately, on at least 10 separate occasions when DOE has self-certified a spent fuel cask for its own use, DOE has subsequently been unable to obtain certification from NRC so that commercial shippers could also use the casks. 7/ In other words, DOE's concept of what meets NRC standards appears to be at odds with NRC's analyses.

Next to the LLD-1 described above, the most distressing example of this disparity in assessment involves the MH-1A, a spent fuel cask, two of which were originally manufactured in 1971 and used by the Army for 23 shipments between 1974 and 1977.

DOE then assumed ownership of the casks and granted them licenses in 1980, based on an upgraded DOE safety analysis. 8/ In addition, DOE requested certification from the NRC so that NRC licensees could also use the casks. NRC asked for more information because of structural questions related to the casks' ability to survive the drop test and because of questions involving a potential loss of shielding in the event of a fire. 9/ DOE completed some cask redesign including adding a fire shield, and began shipments from Brookhaven National Laboratory through New York City in 1985. DOE made a total of 13 shipments despite the fact that NRC continued to question the safety of the casks' design. When DOE still could not satisfactory answer all of NRC's concerns, DOT ordered that the cask be suspended from use. 10/

NRC has inspected few, if any, casks during production. The agency has based certification on the paper trail of fabrication. This record is consistent with the number of manufacturer inspections for hazardous materials shipping containers generally. In 1984, DOT inspected only 144 out of 7000 container manufacturers. 11/ This situation neither fosters the most careful manufacturing protocol nor public confidence. Of course, no outside entity inspects DOE's cask manufacturers.

A major part of the NRC certification design criteria is a demonstration that a cask could withstand a series of four severe accidents. 12/ Unfortunately, a container may be certified as meeting the design criteria on the basis of computer simulated accidents, rather than on the basis of actual full-scale testing with prototype casks. The rationale for this use of the computer as a replacement for physical testing would appear to be based on cost - computer runs are cheaper than actual tests with real casks that are each expensive to construct. Safety has simply not been the priority consideration.

The consequence of allowing certification on the basis of computer simulated responses to accident stresses, or even on the basis of small model, i.e., quarter size, tests is an incorrect prediction. That is a lesson which this country should only need to learn once, and the occasion has already passed. TRUPACT, the container which DOE designed and built to carry transuranic waste to the Waste Isolation Pilot Plant in New Mexico, was designed to withstand the NRC hypothetical accident conditions and further tested by subjecting quarter-scale models to repeated proof tests, or field verifications. However, when DOE tested a full-scale TRUPACT in 1985, the cask failed after 35 minutes of fire. 13/ (The NRC certification standards require only that one demonstrate that the cask withstand a 30 minute all-engulfing fire, but the DOE engineers, to their credit, accepted the TRUPACT's failure at 35 minutes as an indication that redesign was necessary.)

EDF would also point out here that with regard to the TRUPACT, DOT is being put in an awkward situation which highlights the messy results of having three agencies involved in nuclear waste transportation regulation. The NRC is generally considered to be the agency with the expertise for judging the safety of things nuclear. But, Congress expressly barred NRC from playing a role in the WIPP program. 14/ Thus, the shipping containers to be used in transporting transuranic waste to the WIPP will be certified by DOT according to their requirement that all containers be certified as meeting standards equivalent to those of the NRC. 15/

DOE has requested that DOT change this requirement to allow DOE to use TRUPACT, a container which everyone conceeds does not meet the NRC standards. Thus, DOT is faced with making a determination of the safety of a container for the shipment of plutonium contaminated waste when DOT was not itself responsible for adopting the underlying safety criteria. DOT simply does not have the personnel or expertise to make this decision, but because NRC is barred from the process, DOT will in effect be asked to change the NRC standards for what is a necessary safety design criteria.

Neither DOT nor NRC have credible inspection and enforcement programs. With regard to the situation at DOT, the total number of inspectors responsible for hazardous materials transport has decreased over the last decade such that in 1985, there were the equivalent of 110.5 inspectors for all hazardous materials, including nuclear waste, traveling by all modes. 16/ Not to be outdone in minimalism, NRC has a grand total of 6 inspectors out of a total of 80, who devote their time to the inspection of nuclear waste shipments. 17/ Even though there have not been that many shipments, these inspectors have been unable to find the problems that have occurred in a timely manner.

Look, for example, at the history of the NAC-1. Seven of these casks were made in 1974. In a two-week period during June 1977, among three casks then in service that had been used in approximately 150 shipments, inspectors discovered 5 open vent valves and one open drain valve. One NRC inspector concluded these valve failures resulted from normal truck vibrations during transport because the valves had not been adequately tightened originally, possibly as a result of incorrect installation instructions. 18/ Although these casks had been in use for several years, no one had discovered this problem before. One reason may be because inspection regulations did not require an inspection of the valves at the end of a shipment, just prior to shipment. 19/

At the time of their fabrication, NAC-1's lead shielding was poured in a molten state into the space between two concentric shells and left to cool. Because the shielding in one of the casks was thinner than desired in places, the manufacturer welded copper plates to the outside of that cask, an unauthorized response which went unnoticed during 84 shipments, until 1979 when a purchaser of the cask discovered the plates. 20/ The presence of copper next to the steel shell of the cask can lead to a lowered melting temperature at the point where the two metals are in contact. A loss of lead shielding would allow lethal doses of radiation to escape through the walls of a cask, even absent a breach of the cask's outer integrity. 21/

This same cask, along with a second NAC-1, was also found to have its inner cask cavity shell bowed out of shape in 1979. After the casks' purchaser notified NRC of the casks' condition, NRC allowed an additional four shipments of spent fuel before suspending the casks from use. Neither cask had been in a recorded accident; thus, the bowing was a result of normal use that had occurred during the five years the casks were on the road. 22/ In an accident this bowing could have led to buckling of the inner cavity that might have damaged the fuel rods or forced the pressure relief valves open. 23/

The 67 Ton Rail Cask, built in 1962, was used in the Sandia National Laboratory fire test in 1978. It was designed to withstand a 60 minute fire (as opposed to the 30 minute fire currently required). After 100 minutes, observers saw a white cloud rise from the cask, so they turned the fire off. When the cask cooled enough to examine it, the inspection disclosed that the outer shell cracked, allowing lead shielding to vaporize, that no holes had been drilled in the inner cavity to allow the melted lead to expand in violation of the cask design, and the cask had been completed using improper welds involving incorrect materials and excessive welding temperatures. A loss of lead shielding would lead to the release of more radiation through the walls of the cask, thereby increasing the dosage of people outside, even without a release of radioactive material. None of these defects was observed during the cask's 16 year life. 24/

EDF understands that NRC released a study last month regarding the radiologic effects of an accident involving a spent fuel cask. The study concludes that NRC's 1977 study overestimated the likely radiologic impacts of a serious spent fuel accident. 25/ Although EDF has not yet received a copy of this study, we question its relevance, particularly if the new study has assumed perfectly constructed casks. Such an assumption would render the study's conclusions almost meaningless in predicting the likelihood of an accident in the real world where unexpected flaws frequently occur, as is demonstrated by the history of the casks themselves. It is difficult to factor human error accurately into a risk analysis. For example, the classic fault-tree analysis for a Three Mile Island accident yields a probability of such an accident occuring once during the first three million reactor-years, yet it actually occurred after 500. Similarly, analysis predicted that Chernobyl would occur only once in ten million reactor-years; yet, it occurred after 300. 26/

With regard to the routing of nuclear materials shipments, DOT has established suggested highway routes, but it is waste carriers, without any oversight, who choose the final route for a shipment. 27/ Rail transport, which DOE expects to be the primary future mode for spent fuel shipments, is under even less control. DOT has not even taken the first steps of establishing preferred routes or minimum operator training requirements. Similarly, DOT has no rules relating to the transportation of nuclear materials by barge.

Although EDF does not have information on the expected number of shipments of plutonium over the next several decades, as everyone in this room undoubtedly knows, the number of shipments of nuclear waste is about to take a quantum leap.

If DOE remains on its current schedule, the WIPP in southeast New Mexico will open next year and begin receiving, on the average, 1200 truckloads of transuranic waste each year. Most of these waste shipments will originate in Idaho, Washington or Colorado; however, there will be 29 WIPP shipment corridor states. If allowed to use TRUPACT, despite that container's clear noncompliance with NRC safety design criteria, DOE has established an upper limit of 12,000 curies of radioactivity per truckload. 28/

If Congress authorizes DOE to build a Monitored Retrievable Storage facility (MRS) for the temporary storage and possible consolidation of spent fuel bound for the permanent repository, utilities will ship between 2500 to 3000 metric tons of uranium to that facility during full-scale operations. MRS shipments could begin as early as 1998 under the schedule which DOE recently proposed to Congress. 29/

If and when DOE opens the first repository, it will also accept 3000 metric tons of spent fuel on the average each year. 30/ By contrast, there has been only slightly more spent nuclear fuel shipped in total over the last 15 years. 31/ Depending on where this repository is ultimately located, as many as 46 states will be corridors for spent fuel or high level defense waste shipments. 32/ The curie content of a shipment of spent fuel, assuming one metric ton of uranium per shipment, no rod consolidation and fuel 10 years out of the reactor, is approximately 700,000 curies. 33/ (A more thorough discussion of the radioactivity of spent fuel is appended to this testimony.) Using current containers, that means 6800 truck shipments per year or 860 train shipments. DOE estimates that a new generation of casks will be built by the time the repository opens, which will cut these numbers approximately by half.

DOE HAS FAILED TO CONSIDER TRANSPORTATION FACTORS IN ITS SEARCH FOR A REPOSITORY UNDER THE NWPA.

There is another reason why Congress must take action this session to set the nation's nuclear waste disposal program back on course. In the NWPA, Congress established as national policies both the need to consider transportation costs, risks and impacts when choosing each repository site and the strategy of locating additional repositories regionally as ways to reduce transportation costs, risks and impacts. Because DOE's actions to date undermine or ignore these goals, they conflict with the public interest.

As a result of its concerns about transporting large quantities of nuclear waste across the country to a repository, Congress set out a list of factors in the NWPA for DOE to consider in choosing repository sites. Congress directed DOE to incorporate these factors into guidelines for use in selecting repository locations. NWPA states, in relevant part,

> Such guidelines shall take into consideration the proximity to sites where high level radioactive waste and spent nuclear fuel is generated or temporarily stored and the transportation and safety factors involved in moving such waste to a repository. ... Such guidelines also shall require the Secretary to consider the cost and impact of transporting to the repository site the solidified high-level radioactive waste and spent fuel to be disposed of in the repository and the advantages of regional distribution in the siting of repositories. 34/

This language clearly indicates that Congress intended DOE to consider the costs, risks and impacts of transporting high level nuclear waste when selecting each repository site, although Congress reemphasized the importance of transportation issues in the context of later repositories stating:

> In making site recommendations and approvals subsequent to the first site recommendation, the Secretary and the President, respectively, shall also consider the need for regional distribution of repositories and the need to minimize, to the extent practicable, the impacts and cost of transporting spent fuel and solidified high level radioactive waste. 35/

What has DOE done with this clear Congressional statement? In its first draft of the guidelines, DOE failed to include even one that dealt with transportation. 36/ After strenuous public comment, DOE eventually did insert a transportation guideline, but even that focuses almost exclusively on regional and local issues. Only one of the 13 favorable and adverse conditions listed in DOE's final transportation guideline mentions national transportation; none deals with proximity to waste sources. 37/ Moreover, the transportation guideline contains no disqualifying condition, which means that there is no distance too far, no risk too great, and no cost too high that a site would be rejected on the basis of transportation alone.

DOE's site selection activities have served only to exacerbate the guidelines' deficiencies. DOE did not consider transportation implications in choosing the initial nine potentially acceptable sites for the first repository, at least in part because DOE had not yet issued its guidelines when it identified the sites. 38/ However, there is no indication that DOE considered transportation factors in nominating five from the nine sites nor in recommending three of those five for further characterization. 39/

In fact, when states and others who commented on DOE's draft environmental assessments (EAs) suggested that DOE had not paid adequate attention to transportation factors, DOE responded in the final EAs that it did not need to consider national transportation issues more completely until compiling the Environmental Impact Statement (EIS) to support its final recommendation of a single site for the repository. 40/ DOE baldly asserted that it was not required to consider comparative or absolute transportation costs risks and impacts until the EIS, despite the language in NWPA which directs DOE to finish its site evaluation for each nominated site against each guideline not requiring site characterization for its evaluation. 41/

Transportation is clearly such a guideline; there is nothing DOE will learn from its boreholes that should effect the agency's evaluation of a site against the transportation criteria.

DOE did produce a transportation appendix to the EAs which it issued to justify its nominations, but that appendix can in no way be construed as fulfilling the Congressional directive in NWPA. 42/ One reason for that appendix' inadequacy has to do with the fragmented regulatory scheme which now governs the movement of nuclear wastes on public highways and rails. Thus, in its assessment of transportation risks, DOE assumed that the other agencies involved with regulating transport did their jobs perfectly. For example, DOE appears to assume that NRC will ensure that all casks used are perfectly built and maintained and that DOT will ensure that shippers always travel the routes they are supposed to use. 43/ In other words, the only things that really go awry in DOE's worst case analysis are the accident itself and the prevailing winds. Small wonder that critics claim DOE has underestimated the risks of transport.

Similarly, DOE's transportation appendix arrives at certain cost figures without including many of the line items associated with tranport costs. DOE's rationale for only reporting part of the costs associated with what will be the largest shipping campaign of high level nuclear waste appears to be that some of the costs will not be attributed to DOE's budget. Again, the result of not including all of the costs of transport, *e.g.*, emergency response training, increased road or rail maintenance, and increased numbers of inspectors, is that those reading the final EAs do not see the total financial picture. 44/

Over the past four and one-half years, DOE has demonstrated that it can ignore very explicit Congressional language to consider the costs, risks and impacts of transportation in the process of choosing a repository. The agency's attempts to justify this disregard for the law have resulted in over 35 law suits over the guidelines and nomination/recommendation decisions alone. 45/ Even if there were not problems with the transport of hazardous materials generally for the 100th Congress to address and even if there were not other issues that called for Congressional action specifically to change the manner in which nuclear waste is transported around the country, surely DOE's refusal to deal with transportation under NWPA is enough in-and-of itself to justify Congressional action on the subject of nuclear waste transportation.

WHAT CAN CONGRESS DO NOW TO ENSURE THE FUTURE SAFE TRANSPORT OF NUCLEAR MATERIALS?

EDF believes that the time has arrived for Congress to take another look at how the transportation of nuclear materials is regulated. The concept which we urge Congress to embrace is one of enhanced federalism. Enhanced federalism would allow the federal agencies to focus their resources on:

- **long term planning for the massive shipping campaigns** which are just around the corner. This should include a directive from Congress to DOT to develop thorough, all-

-encompassing cost and risk assessments for the spent fuel and transuranic waste shipping campaigns, as well as a comprehensive analysis of least-risk alternatives for modes and routes for nuclear materials transportation. It is imperative that this effort assure full disclosure of methodologies, peer review and public participation. We would point out that DOT has never even done a comprehensive environmental analysis nor a risk assessment of its current highway routing rules as they apply to nuclear materials transportation.

- **ensuring the safe design, manufacture and ongoing use of containers carrying nuclear materials**, including physical testing of as-built casks to destruction and the presence of inspectors during cask manufacture;

- **a comprehensive inspection program of carrier terminal and materials/waste storage facilities**, which could be accomplished in part simply by transferring the Bureau of Motor Carriers and the Materials Safety Branch to the National Highway Traffic Safety Administration. This reconstituted federal entity could then focus on inspection of carrier terminals and materials/waste sources to ensure safe loading of the materials, as well as on compliance with the industry-wide maintenance and safety standards mentioned below; and

- **the creation of a comprehensive regulation for carriers** that encompasses such diverse matters as minimum standards for operator training, mode and industry specific maintenance protocols and standards, and a national registration system.

At the same time that the federal agencies concentrate their resources on these four facets of transport regulation, all of which EDF believes can best be addressed at the national level, states, tribal and local governments would be left with the responsibility and authority both:

- **to do inspections and enforce safety regulations in transit**, including the authority to regulate stop-times, rest locations, speeds and escorts so as to minimize radiological and other risks, and

- **to establish all surface routes through their jurisdictions.**

This authority would carry with it the right to assess fees as necessary to fund these programs, unless Congress establishes a national funding mechanism for nuclear waste shippers that was structured to allocate funds to corridor governments. At a minimum, Congress should increase funding to the states through mechanisms such as the Motor Carrier Safety Assistance program, administered by the Bureau of Motor Carrier Safety. In addition, Congress should encourage multi-state agreements to provide inspection and enforcement while avoiding duplication and undue interference with commerce. One excellent example of such an arrangement is the Commercial Vehicle Safety Alliance, of which 26 states and 2 Canadian provinces are members. 46/

As it stands now, the states are in an untenable position with regard to the regulation of nuclear waste shipments for several reasons. First, the current program for determining whether a state's regulations attempt to provide for the health and safety of it citizens is not working. After 16 rejections, DOT finally ruled for the first time last year that a comprehensive program enacted by the state of Illinois was acceptable and consistent with Hazardous Materials Transportation Act and its pendant regulations. 47/ Despite Illinois' victory, however, DOE has appealed the ruling and refuses to pay the shipping fee, one of the foundations of an effective Illinois program. Because DOE is the biggest shipper of high level nuclear waste in the country, the fact that DOE is not paying its fair share significantly hampers the Illinois inspection and escort system.

A second indication of the inadequacy of the current state of affairs is the status of emergency response training. As the Office of Technology Assessment reported last year, "[f]ederal grant programs have not provided any direct support for local inspection and enforcement activities." 48/ Moreover, the highly-touted intensive radioactive materials course which DOT offers to local emergency responders, trained a grand total of 120 students between 1980 and 1984. 49/ Because it remains uncertain whether states can collect fees from shippers to pay for inspection or emergency response training, local governments must resort to general revenue sources if they want to train their personnel.

Shippers will undoubtedly maintain that there is no need for more state inspection or enforcement activities because the federal government adequately covers the field. They will point to their transport record, proudly citing the absence of accidents with spent fuel shipments that have resulted in the release of radioactivity. However, as can be seen from the facts recited above, this unblemished record is not a result of error-free construction or maintenance of nuclear waste shipping containers, nor of adequate oversight. As I said before, it is luck.

In a system of enhanced federalism, there will also be areas where the federal agencies and the states and tribes need to cooperate more directly. Thus, DOT (in cooperation with the NRC) should be directed to develop true worst-case radioactive release scenarios for accidents and sabotage of spent nuclear fuel and high-level waste shipments, which local governments could then use as a basis for developing detailed analyses of their needed emergency response capabilities and identifying where those capabilities are currently lacking.

PENDING LEGISLATION

There are at least four bills now pending in the Senate which address some concerns about nuclear waste transportation. Below, I have summarized EDF's initial reactions to these bills:

S.B. 833 (Sen. Hecht) - This bill gives localities the authority to route nuclear materials shipments around urban areas. EDF supports the rights of states to identify those routes within their jurisdictions that are the safest, after consideration of the populations at risk, the quality of the tracks or highways, the need for contiguous routes with neighboring jurisdictions, the need to minimize switching tracks or carriers, emergency responder preparedness and other relevant factors. States should be required to coordinate their route designation with local authorities, to confer with affected neighboring states or tribes and to consider public comment. Senator Hecht's bill is at present only a fragment of a comprehensive safe transportation scheme; it is incomplete in that it calls for a demonstration of a safer route, but fails to indicate to whom a locality might make such demonstration or the standard which such demonstration must meet. To the extent that Senator Hecht's bill could be encorporated in a larger overall safe transport scheme that gives back to the states authority over the designation of safe routes, EDF believes that the nation would be better served.

S.B. 1008 (Sen. Proxmire) - EDF supports many of the concepts in this bill, but questions whether it would best function as an amendment to the Atomic Energy Act giving the NRC authority over shipping, or whether instead it would be better styled as an amendment to the Hazardous Materials Transportation Act. EDF supports, in principle, a national licensing system. There are, however, several provisions of the bill as currently drafted which are unclear. For example, is the intent of the bill in section 312(d) to require environmental assessments as that term is defined in the National Environmental Policy Act (NEPA) or some other type of environmental analysis; if the latter, would NRC provide for public participation similar to NEPA requirements? EDF would prefer explicit language regarding the licensing process, again with our particular concern over public participation. Would the license proceeding follow Administrative Procedure Act procedures? With regard to the other provisions of the bill, EDF would urge Congress to adopt the provisions of Section 315, which list areas in which states and tribes must be free to assert regulatory authority. EDF believes that allowing states to act to protect public health and safety and the environment within their jurisdictions is precisely what federalism is all about. Only with regard to driver certification requirements would EDF disagree with Senator Proxmire. Because of the interstate nature of these shipments, we believe it would be better for Congress to direct the Department of Transportation to establish national minimum training requirements for drivers and operators of nuclear waste shipments.

S.B. 1269 (Sen. Wirth) - In general, EDF supports the major provisions of Senator Wirth's bill.

Grants to the states for the designation of routes fits well within our vision of enhanced federalism, although as a member of Colorado's Nuclear Materials Transportation Advisory Committee, I would note that at least one reason for the lack of designated parking sites in some states involves questions of liability for incidents which occur at those sites. Senator Wirth's bill does not address the question of liability and thus may not entirely solve the problems which a lack of designated sites create.

The annual registration section may provide useful information if the Department of Transportation commits both to using the information provided as a tool for enforcement and inspection activities and to disseminating the collected information to appropriate state and local officials. EDF believes that Congress must expand the current language of the bill to make these duties explicit and thereby ensure that this section does not lead to an empty paperwork requirement.

EDF lauds the sections of this bill which provide for increased funding to states for emergency training and which mandate minimum training standards for personnel who load and handle hazardous materials. However, it is unclear whether the personnel training section applies to those persons responsible for rail transport. The language should be clarified to ensure that rail workers are also covered given that DOE expects the bulk of the high level waste shipments to a repository to move by rail.

The final section of the bill mandates analyses both of the risks to health, safety and the environment by the Secretary of Transportation in consultation with the Department of Energy and of least risk transportation alternatives which are precisely the sort of comprehensive analysis that EDF has consistently advocated. There are only two things lacking from the analysis required in S.B. 1269. First, the analysis does not include an assessment of the risks associated with the transport of transuranic waste, which we believe should be included. Second, the analysis is limited to the routes which lead to the five sites nominated for the first repository. Since EDF has objected to the technical and legal bases for the selection of those sites, we would suggest that this section of the bill be changed to require the same type of analysis for routes to all 'potentially acceptable sites' identified for each repository.

S.B. 1266 (Sen. Evans) - Although EDF agrees with many of the sentiments that led to the introduction of this bill, we believe that the creation of a regional MRS program as a stop-gap proposal is much less acceptable, particularly from the standpoint of increased transportation risks, costs and impacts, than reliance on at-reactor, dry cask storage. There are now two and possibly three reactors in the United States that have licensed at-reactor storage casks. There are more than 2000 such casks licensed in Europe. Leaving spent fuel at the reactor until there is a permanent disposal facility or strategy ready makes imminently more sense than shipping spent fuel around the country, or even around a region. Only for reactors that have no on site dry storage capacity should the federal government agree to move and store fuel pending implementation of a permanent solution. To the extent that Congress wants to encourage utilities to invest in at-reactor storage, moneys from the Nuclear Waste Fund that might otherwise have been allocted to building an MRS could be made available for the purchase of at-reactor, dry storage casks.

Moreover, to the extent that this bill would leave overall authority for the nuclear waste disposal program in the Department of Energy, without some type of outside oversight, we believe that a more dramatic restructuring of NWPA is necessary.

Finally, the last section of Senator Evans' bill would amend the Hazardous Materials Transportation Act to allow for state regulation of hazardous materials, including nuclear materials, through their jurisdictions, specifically providing the authority to impose fees, require permits and documentation, designate routes and set minimum driver qualifications. EDF supports all but the last of these delegations of authority. In fact, under the concept of enhanced fedralsim, we believe that such delegation is appropriate. However, with regard to driver training requirements, we would far prefer to see minimum national standards in force.

In sum, EDF would advocate that the time to act to ensure the safe transport of nuclear materials during the large shipping campaigns that loom in the future is now. There are several bills presently before the Congress which offer promise on a variety of topics. One could serve as a vehicle to restructure the transport of these superhazardous nuclear materials in a way that minimizes the costs and risks to public health, safety and the environment. What none of these bills do, however, is halt DOE's progress on the selection of a high level waste repository or commencement of operations at the WIPP pending the resolution of transportation and other technical problems. Lest Congress continue to run up against deadlines that might pressure this country to accept something other than the safest technical options, EDF urges the members to do whatever is necessary to get the whole nuclear waste program back on track, even if that means calling a time out.

Thank you.

FOOTNOTES

1. Audin, Lindsay, *A Review of the Effects of Human Error on the Risks Involved in Spent Fuel Transportation*, prepared for the Nebraska Energy Office, 1986, rev. 1987 (*Audin*), p. 34.

2. DOE, "Re-Evaluation of LLD-1 Package" DPST-79-217, 1979.

3. MacDonald, Charles (Chief, Transportation Certification Branch, Nuclear Regulatory Commission), Letter to DOE, Attn: Donald Ross with enclosure, May 13, 1980.

4. *Audin*, *supra*, p. 35.

5. Finley, et al., *Transportation of Radionuclides in Urban Environs: Draft Environmental Assessment*, NUREG/CR-0743, prepared for NRC, 1979, p. 120.

6. 49 C.F.R. 173.417

7. *Audin*, *supra*, p. 33. [This table is attached hereto as Appendix B.]

8. *Id.*, p. 31.

9. MacDonald, Charles, Letter to DOE, Attn: Reuben Prichard with enclosure, February 24, 1983.

10. Santman, L.D. (Direct Materials Transportation Bureau, Department of Transportation), Letter to Ronald Cochran, DOE, May 23, 1985.

11. Office of Technology Assessment, *Transportation of Hazardous Materials*, U.S. Government Printing Office, Washington, D.C., 1986 (*OTA*), p. 206. Although the OTA study ultimately concludes that there are more current dangers and more need for reform in the hazardous materials tranportation industry generally, than specifically in the area of nuclear waste transport, EDF does not believe that OTA's conclusions will apply in the future. First, because OTA's study never considered transuranic waste shipments, the study has no relevance to the debate over the WIPP shipments. Second, because OTA's conclusions are based on an historic record of a tiny number of shipments of spent fuel, in comparison to what will obtain with MRS or repository shipments, the study cannot be used to extrapolate future system weaknesses.

12. 10 C.F.R. Part 71.

13. DOE, *TRUPACT: Transuranic Package Transporter* [a flyer], Albuquerque, N.M., 1985.

14. Pub. Law 94-164, the authorizing legislation for the WIPP.

15. 49 C.F.R. Part 173(d).

16. *OTA*, *supra*, p. 209

17. *Id.*, p. 211; and *Audin*, *supra*, p. 52.

18. Head, J.T., Letter to Director of Nuclear Materials Safety, NRC with enclosures, July 12, 1977; and Burstein, Sol, Letter to Director of Nuclear Materials Safety, July 21, 1977.

19. *Audin*, *supra*, p. 42.

20. Rollins, Jack, Letter to C.E. MacDonald (NRC), April 12, 1979; and NRC, Inspection Report No. 99900331/79-01.

21. *Audin*, *supra*, pp. 43-44.

22. *Id.*, p. 44.

23. *Ibid.*

24. *Id.*, pp. 38-39.

25. 51 Fed. Reg. 17862 (May 12, 1987).

26. *Audin*, *supra*, pp. 54-55.

27. 49 C.F.R. Parts 173 and 177 ("HM-164").

28. Channel, James, et al., *Adequacy of TRUPACT-1 Design for Transporting Contact-Handled Transuranic Wastes to WIPP*, EEG-33, State of New Mexico, Santa Fe, N.M., 1986, p. v.

29. DOE, *Monitored Retrievable Storage Submission to Congress*, vol. I, DOE/RW-0035/1-REV 1, Washington, D.C., 1987, p. 20.

30. DOE, *Environmental Assessment*, vol. 2, DOE/RW-0069 to 0073, Washington, D.C., 1986, p. A-31.

31. *OTA*, *supra*, p. 91 [EDF data manipulation].

32. Western Interstate Energy Board, *Spent Nuclear Ruel and High-Level Radioactive Waste Transportation* [DRAFT], Denver, CO, p. 37-53.

33. Lipschutz, Ronnie, Radioactive Waste: Politics, Technology and Risk, Union of Concerned Scientists, Ballinger Publishing Co., Cambridge, MA, 1980, p. 43.

34. 42 U.S.C. Section 10132(a).

35. 42 U.S.C. Section 10134(a).

36. 48 Fed Reg. 5670 (February 7, 1983).

37. 10 C.F.R. Part 960, Section 5-2-7.

38. DOE sent letters to the six governors in whose states it had identifed sites in February 1983. The guidelines were not published in final form until December 1984.

39. There is no evidence that DOE considered transportation factors in its nomination of five sites. See, e.g., DOE, Environmental Assessment for Davis Canyon, Utah, DOE/RW-0071, Office of Civilian Waste Management, May 1986, vol. I, pp. 1-5 to 6. In recommending three of the five nominated sites, DOE explicitly refused to consider fully the implications of transportation, first by declaring transportation to be of secondary concern, even among the preclosure factors and second by excluding altogether the costs of transportation from its ranking methodology. DOE, A Multiattribute Utility Analysis of Sites Nominated for Characterization for the First Radioactive-Waste Repository -- A Decision-Aiding Methodology, DOE/RW-0074, Office of Civilian Waste Management, May 1986, p. 5-16.

40. DOE, Environmental Assessment(s), DOE/RW-0069 to 0073, Office of Civilian Radioactive Waste Management, May 1986, "Comment Response Document," vol. III, p. C.7-27.

41. 42 U.S.C. section 10132(b)(1)(E)(ii).

42. DOE, Environmental Assessment(s), DOE/RW 0069 to 0073, Office of Civilian Radioactive Waste Management, May 1986, "Transportation Appendix, vol. II, pp. A-1 to 95.

43. Id. pp. A-23 and reports cited therein.

44. Id. pp. A-60 and report cited therein; see also "Comment-Response Document," EA, vol. III, pp. C.2-36 to 49.

45. Nevada v. Herrington, 9th Circuit Case No. 86-7307, consolidated with four other petitions by Nevada, four by Texas, four by Washington, and one each by Idaho, Oregon, Utah, Mississippi, Nuclear Waste Task Force, et al., Yakima Indian Nation, People Against Nuclear Dumping at Hanford, EDF (with

petitioner-intervenors Colorado and Nebraska), National Parks and Conservation Association, *et al.*, Sierra Club, Coalition for Safe Power, Clark County P.U.D. #1 and International Union of Agricultural and Industrial Workers. These cases challenge the decisions made under NWPA in May 1986. *Environmental Policy Institute v. Herrington*, 9th Circuit Case No. 84-7854 consolidated with two petitions from Washington and one each from Nevada, Minnesota, Utah, Vermont, Mississippi, Texas, POWER, *et al.*, Lakes Environmental Association, and the National Parks and Conservation Association, *et al.*, with EDF, Sierra Club, Colorado, Nebraska, Idaho, Oregon and Citizens Against Nuclear Trucking as petitioner-intervenors in one of the cases.

46. OTA, *supra*, p. 214.

47. 51 Fed. Reg. 20926 (June 9, 1986); DOT, IR-17.

48. OTA, *supra*, p. 213.

49. OTA, *supra*, p. 209.

APPENDIX A

A NOTE ON THE RADIOACTIVITY OF SPENT FUEL

Spent nuclear fuel and high level nuclear waste, which is produced from the reprocessing of spent fuel and from certain defense related processes, (hereinafter referred to as "HLW" or "waste") are unfortunate by-products of our ability to use nuclear power. Since the beginning of the nuclear age, industry, the government and other interested parties have grappled with the question of how to dispose of HLW or at least how to isolate such waste from the public and the environment. One can only begin to understand the level of concern surrounding the debate over nuclear waste if one appreciates its highly toxic nature.

Radioactivity results from the decay of unstable atoms of material; an unstable atom ejects particles with either mass or energy or both, thus creating radioactivity. Unstable atoms continue to emit particles until they have decayed into a stable, nonradioactive form. For most products of nuclear fission, the atoms undergo multiple transformations, from one unstable form to another before they reach a stable state; this process is called the decay chain. Some isotopes of the decay chain are termed the "daughter products" of the original radionuclide.

Radioactivity is measured in several different ways depending on the relationship which one wants to represent. One basic unit of radioactivity is a curie (for Madame Maria Curie) which is equivalent to the radioactive emissions, or decay rate, of one gram of pure radium. Another way to discuss a substance' radioactivity is by estimating the hazard to living tissue posed by exposure to that substance. One unit used to measure radioactive exposure, or dosage, is the 'rem' which represents the radioactive dose that a person receives when exposed to certain radioactive substances.

Yet another way to compare the hazards posed from different radionuclides is by looking at their half-lives, where a half-life measures the length of time that a particular nuclide remains radioactive. At the end of its half life, radioactive matter emits one half as much radioactivity as it did to start because of the decay which has occurred. Although many nuclides in the spent fuel inventory have half-lives less than one day, at least 58 have much longer radioactive lives and several have half-lives of millions of years. Lipschutz, Ronnie, Radioactive Waste: Politics, Technology and Risk, Union of Concerned Scientists, Ballinger Publishing Co., Cambridge, MA, 1980, ("Lipschutz"), pp. 178-179.

When one metric ton of spent fuel emerges from the core of a light water nuclear power reactor (the most common type of commercial reactor in the United States), it contains up to 221 megacuries of radioactivity, where one megacurie equals one million curies. Office of Technology Assessment, Managing the Nation's Commercial High Level Radioactive Waste, U.S. Government Printing Office, Washington, D.C., 1985, ("OTA") p. 25; citing Croff, A.G. and C.W. Alexander, Decay Characteristics of Once Through LWR and LMFBR Spent Fuels, High Level Wastes and Fuel-Assembly Structural Material Waste. ORNL/TM-7431, Oak Ridge National Laboratory, Oak Ridge, TN, 1980. After the spent fuel has been out of the reactor for 150 days, because of the decay which occurs, a metric ton contains "only" 4.6 megacuries of activity. Lipschutz, p. 43. After 10 years, the radioactivity of one metric ton of spent fuel has dropped to less than 0.7 megacuries and after 10,000 years scientists estimate that the total radioactivity would be 470 curies. Ibid.

Radiation, or radioactive emissions present a hazard to living organisms because the particles emitted can penetrate tissue thereby causing damage, from either mutation or death of the tissue cells. Exposure to high levels of radioactivity can lead to death. And, how a person is exposed to radioactive emissions is critical; external exposure to certain types of radiation results in a significantly less severe hazard than inhalation of the same type of radioactive particle. For example, the external radiation does from exposure to Cesium-137, a common product of nuclear fission, is almost four times that of the whole body dose for ingestion of the same amount of Cesium-137, whereas for Plutonium-239 which is also produced from the fission reaction, the dosage from ingestion is 2526 times the dosage for external exposure to the same quantity. Lipschutz, p. 26.

The reason that these two elements pose such different hazards is that they emit different types of radioactive particles. These types of radiation are most frequently identified by the type of particle or energy emitted. The most common types of radiation are alpha, beta and gamma, where alpha particle emissions are identical to the nucleus of a helium atom, beta particle emissions are each composed of a single electron, which is a negatively charged atomic components, and gamma rays are electromagnetic ionizing radiation. Different types of radioactive are dangerous in varying degrees and emissions from different radionuclides tend to effect disparate human organs. In addition, even radionuclides emitting the same type of particle each give off different quantities of particles at different rates.

One reason that the rem is such a useful unit of measurement is that it computes the hazard of a radionuclide so that one can compare the effect of dosages from one type of radionuclide with another. For example, when contrasting the effects of inhaling one one-millionth of a curie (one microcurie) of Plutonium-239 with inhaling the same amount of Cesium-137, the dose resulting from the plutonium is 110 rems whereas the dose resulting from the cesium is only 0.032 rems. On the other hand, external exposure to one curie of radioactive Cesium-137 spread over one square meter of ground for one day would lead to a dose of 137 rems of activity whereas the dosage from external exposure to the same amount of Plutonium 239 would be dramatically less: 0.38 rems. Lipschutz, p. 26.

The major reason for this discrepancy is that plutonium is an alpha emitter while cesium emits beta and gamma rays. Alpha particles do not travel through human tissue; in fact, they can be stopped by a piece of paper. However, if inhaled or ingested such that they become lodged in tissue, alpha particles pose a high risk of tissue cell mutation. By contrast, beta and gamma radiation are powerful in their ability to move through tissue; thus, they need significant shielding, although they do not pose a great danger if inhaled or ingested. Lipschutz, pp. 184-185. In one metric ton of spent nuclear fuel, at the time it is taken from a reactor's core, there are 208,000 curies of Cesium-137 and 323 curies of Plutonium-239. The half life of the Cesium-137 is 30 years; Plutonium-239's half life is 24,400 years. Ibid. Plutonium-239 and Cesius-137 are but two of the hundreds of different isotopes which comprise the radioactive inventory of spent fuel. Id., p. 177.

Although scientists have a fairly high confidence level when speaking about the effects of high radiation dosages, data is much more scarce and the consequent confidence level in predicting the effects of low level radiation dosages is relatively low. Thus, exposure to 1000 rems in a single, "acute" incident will invariably result in death, and a single, whole-body exposure to 400 rems will cause death in fifty percent of the organisms exposed. Doses of radiation between 100 and 400 rems lead to radiation sickness and in some instances to cancer, although the exact doses necessary to generate future cancers are unknown. The symptoms of radiation sickness run a gamut, from the comparatively minor - nausea, vomiting, headaches, dizziness and malaise - to the more severe, including loss of antibody production with its consequent susceptibility to infection. Long term, chronic exposure to low level doses of radiation can lead to other hazards, e.g., latent cancers or genetic defects. Lipschutz, p. 15; OTA, p. 23.

By contrast, the precise effects from doses less than 100 rems is unclear. Studies show that the average American is exposed through background radiation and incidental human-made radiation (like x-rays) to approximately 160 millirems (thousandths of a rem) annually. Recently, EPA estimated that this background level of radiation is responsible for approximately 6000 cancers annually. 50 Fed. Reg. 38082 (Sept. 19, 1985). Based on the assumption that no level of exposure is without risk, both the Nuclear Regulatory Commission and the Department of Labor have set limits on the exposure level for workers in nuclear facilities of 1 rem whole body dose per calendar quarter. 10 C.F.R. Part 20.101 and 41 C.F.R. Part 50-204.21. EPA has set a maximum dose for worker exposure from a single incident release at 25 millirem. 40 C.F.R. Part 190.10(a).

If DOE were to use shipping containers with a payload equal to that of those now on the road, one could expect as many as 6800 truck shipments or 860 train shipments as a yearly average during the period when the first repository is accepting HLW.

Western Interstate Energy Board, "White Paper on High Level Nuclear Waste Transportation," 1985, pp. 38-53, incorporating maps and data from Oak Ridge National Laboratories. However, DOE anticipates "only" 70,000 total truck, or 9800 total train shipments over the 26 year life of the repository, because a new generation of shipping containers will be available with a much-enlarged payload capacity. DOE, Environmental Assessment, DOE/RW-0069 to 0073, Washington, D.C., 1986, (EA) Transportation Appendix, p. A-11.

Using the new generation of shipping casks, a truck would carry two spent fuel assemblies from a Pressurized Water Reactor, each containing approximately 0.46 metric tons of uranium. Under Lipschutz' assumption about curie content of spent fuel and assuming that the fuel has been out of the reactor core for 10 years, the radioactivity of a truck shipment would approach 0.7 megacuries. Lipschutz, p. 43. Rail cars, which will carry seven times the number of spent fuel assemblies that trucks hold, EA, Transportation Appendix, p. A-11, would average a curie content of 4.7 megacuries under the same assumptions. Although DOE consistently predict lesser curie contents for spent fuel radioactivity, see footnote 2 hereinabove, even the number their contractors use, 1.3 megacuries for a rail car loaded with 12 assemblies, is frighteningly large. Wilmot, et al., "A Preliminary Analysis of the Cost and Risk of Transporting Nuclear Waste to Potential Candidate Commercial Repository Sites," Sandia National Laboratories, SAND83-0867, Albuquerque, NM, 1983, pp. 33-34.

The risks associated with the transportation of spent nuclear fuel, or any type of radioactive material, are logically related to the number of miles traveled, among other factors, such as a route's population density or the hazards of a route's terrain. Even DOE conceeds that the farther a shipment travels, the greater the costs and risks because, inter alia, the more likely an accident (whether it results in a radiologic release or not) and the more people who may be exposed along the route to the radioactivity effects of just normal transport. EA, p. 7-95.

APPENDIX B

TABLE 2.

Container	Date of Request For NRC Approval	Date Review Was Terminated	Dates Of Known Usage	No. Verified Shipments	Items In Question
HFBR	02/14/78	05/31/83	1968-1976	Over 100	Structure, Seal
Rover	09/26/75	01/22/85	1968-1972 (Approx)	No. Unknown	Structure, Thermal, Shield, Criticality
HNPF	08/02/78	05/31/83	1964-1971	No. Unknown	Structure, Seal, Criticality
			1978-1979	12	
HFIR	1979 Approx.	Still Pending	1978-1983	111	Unknown
ANL-402-SPM	04/02/79	05/31/83	1978-1983	34	Structure
ANL-390-SPM	12/30/77	05/31/83	1977	1	Structure, Seal
Paducah	11/17/82	05/31/83	1982-1983	8	Structure, Seal
Garden Carrier	08/24/81	05/09/85	1981-1985	11	Structure, Seal
Loop Transport	07/13/78	05/09/85	1978-1982	11	Seal
In Pile Capsule	07/31/78	05/31/83	No Shipping Record Available		Structure, Seal Thermal
MH-1A	09/07/82	Still Pending	1974-1977	23	Structure, Seal
			1985	13	

Reprinted from Audin, Lindsay, A Review of the Effects of Human Error on the Risks Involved in Spent Fuel Transportation, prepared for the Nebraska Energy Office, 1986, rev. 1987, p. 33.

ENVIRONMENTAL POLICY INSTITUTE

STATEMENT OF DR. FRED MILLAR
DIRECTOR, NUCLEAR AND HAZARDOUS MATERIALS TRANSPORTATION PROJECT
ENVIRONMENTAL POLICY INSTITUTE

BEFORE THE

SUBCOMMITTEE ON NUCLEAR REGULATION
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
U.S. SENATE

JUNE 3, 1987

MR. CHAIRMAN AND MEMBERS OF THE COMMITTEE:

I appreciate the opportunity to testify before you in this hearing on the problems surrounding the shipment of nuclear waste. The Environmental Policy Institute is a national environmental organization specializing in energy, water, toxics, and agriculture issues.

The Institute was closely involved in the passage of the Nuclear Waste Policy Act of 1982 (NWPA), and we support the main thrust of that legislation towards a geological program for disposal of nuclear wastes as safe as possible with substantial opportunities for participation in program planning by citizens and affected jurisdictions. We continue to follow closely the implementation of the NWPA, including the Department of Energy (DOE) planning for transportation of nuclear irradiated fuels to the repositories.

EPI has been working on hazardous materials transportation issues for seven years, and has testified in numerous state and local legislative bodies as well as in the Senate Commerce Committee and in the House of Representatives. EPI was a consultant to the City of London, England and to the State of Utah on nuclear spent fuel transport and was a member of the national Task Force on Nuclear Transport issues convened by the President's State Planning Council on Radioactive Waste Management. We have also drafted model legislation for cities and states.

Current federal law and court decisions put issues of nuclear waste transport squarely within the larger context of hazardous materials transportation. We have seen nuclear waste transport issues emerge as the leading edge of similar issues with overall hazardous materials transport. On routing issues, for example, the Department of Transportation's (DOT) 1981 regulation HM-164

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(historically and expressly a federal preemptive response to New York City's 1974 ban), was narrowly crafted to apply only to nuclear materials transport by truck, but with an explicit DOT statement that further routing regulation for other hazardous cargoes and other modes was not precluded for the future.

Routing issues have subsequently risen to the fore for non-nuclear cargoes, as have issues of hazard assessment (evaluation of the "worst case" consequences) of accidents for various cargoes, which an early NUREG-0170 document from the U.S. Nuclear Regulatory Commission estimated for nuclear shipments.

In nearly any discussion of nuclear cargoes, someone will argue, often persuasively, that there are more dangerous cargoes on U.S. highways and railways than even nuclear irradiated fuel, and that the former are less well protected in (container) packaging. Public concern for and the visibility surrounding nuclear cargoes, however, have resulted in unchallenged federal hazard assessments studies focused on health effects, for example, the Sandia "Urban Study" of 1979 (explicitly geared to New York City), which have outlined in detail the catastrophic effects that even a one percent release from a cask of nuclear irradiated fuel could have in a densely-populated area: thousands of latent cancer fatalities and up to $2 billion in property costs. We have only recently begun to learn, after Bhopal, that we are not as well informed about the potential effects of phosgene gas, ethylene oxide, acrolein, and other ultrahazardous cargoes.

A crucial public policy need in hazardous materials transportation overall is to achieve a vastly improved situation of "informed consent". The current situation is that most U.S. citizens are in more or less blissful ignorance of the real hazards they are exposed to in the transport of nuclear and other hazardous cargoes. The new Superfund Title III law, the "Community Right-To-Know and Emergency Planning" law enacted in October 1986, will soon allow citizens living near major chemical plants to get the companies' "worst case" hazard assessments and to do their own, as an integral part of the emergency planning process. (How plan for an emergency if you don't know what it could be?)

No city and state officials that I know of have obtained from the shippers of the most dangerous cargoes their worst case hazard assessments for an accident in their jurisdiction. Even in cases in which city officials doing a study of hazmats cargoes risk requested information from major carriers, e.g., in the current Denver study on rail risks, the annual hazmats shipment information from the railroads is regarded as suspect.

Because many citizens are more at risk from the transport of dangerous chemical cargoes than from their manufacture, the new Superfund law also calls for the new "local emergency planning committees" to study the routes of hazardous cargoes through their communities. But the transportation sector is largely exempted from the new Superfund law with an explicit exemption in Section 327, one argument being that similar chemical safety legislation affecting transportation should be handled in the Congressional committees with jurisdiction over the Hazardous Materials Transportation Act. It would be a useful conforming legislative action if the Congress would require that the transportation sector be more fully included in the Title III planning process.

Most of the shippers of the most dangerous cargoes also seem intent on keeping their shipments as invisible to public scrutiny as possible. Besides an unwillingness to share hazard assessments for worst case accidents, shippers also want their shipments to move unnoticed in the general flow of commerce.

For nuclear shipments, for example, I suggest a litmus test for the major shipper, the U.S. Department of Energy (DOE): I ask what very conspicuous color they are planning to paint their irradiated fuel casks as they move them across the country to various waste storage sites? This question tends to confound DOE, which seems to be pursuing its Monitored Retrievable Storage facility plans largely as a way of reducing the political visibility of its very numerous irradiated fuel shipments across mid-American states. (In response to citizen protests, DOE has reportedly re-painted its nuclear weapons "White Trains" different colors to make them less easy -- still not impossible -- to spot by the nuns and others who hold up banners and vigil with candles wherever the train moves.)

The principle of "conspicuity" is a respectable one in hazardous materials policy, however, and vital for the protection of transportation workers (e.g., in rail switching yards) and emergency response personnel in case of accidents in which the dangerous cars could be hard to identify due to smoke, fire, or placards' having been destroyed or scraped off. Difficulty of identifying dangerous railcars is one of the most frequent serious problems in emergency response to derailments, as in the case of the unrecognized sulfur car in the recent Miamisburg accident. (Arguments alleging "sabotage" dangers are completely spurious for nuclear and non-nuclear placarded cargoes, as was affirmed by the 1980 Congressional law which forced the publication by U.S. NRC of the routes of nuclear irradiated fuel shipments.)

The U.S. chemical company that ships the extremely dangerous hydrogen cyanide voluntarily paints a big red stripe around its bright white cars ("candy-stripers"). In Canada, new national regulations call for a one-foot wide orange stripe around all railcars with compressed gases. The U.S. National Transportation Safety Board (NTSB), despairing of any similar regulation from the DOT's Federal Railroad Administration (FRA), has made recommendations to the Chemical Manufacturers Association (CMA) that the most dangerous U.S. hazmats rail cars be color-coded; CMA apparently disagrees, and has instead studied a method of installing "transponders" that will emit a characteristic signal identifying the cargo to any emergency responder lucky enough to have the right receiver.

As this committee is well aware and as the public at large is coming to appreciate, major safety improvements in the use and transport of ultrahazardous materials often seem only to follow very serious accidents. Well-known examples of this unfortunate pattern would include improvements in major industrial hazards following the accidents at Three Mile Island, Seveso, Italy, and Bhopal, India and Linden, New Jersey; and the railcar safety improvements that have followed terrible rail accidents at Crestview, Florida and Waverly, Tennessee. New state and local legislation and/or regulation is in the works following the recent hazmats derailments in Miamisburg and Pittsburgh.

Explosions and large-scale evacuations are, obviously, powerful incentives to focus the mind. Such serious incidents in recent years as those in Somerville, MA; Missassaugua, Ontario; the Caldecott Tunnel fire near Oakland, CA; the Denver, CO, nitric acid incident, the Miamisburg phosphorus railcar fire, and the recent Pittsburgh incident are sobering reminders of the need for serious improvements in the transportation of hazardous materials.

Environmentalists are concerned not only with the obvious short-term hazards to people in such accidents as BLEVEs (boiling liquid evaporating vapor explosions) and chlorine releases, but also with the long-term hazards to people in communities from transport accidents that release toxics to their land, groundwater, and municipal water systems. Such long term hazards, we fear, are not fully taken into account, for example, by recent DOT rule-making proposals concerning rail tank car retrofits, insofar as these proposals focus on preventing the "acute" or short-term hazards such as explosive and flammable commodities to the neglect of long-term hazards from toxics. Thousands of Americans have in recent years been forced to take a crash course in the hazards of toxic materials and have prompted or supported vigorous local, state and federal action to deal with these hazards. The environmental community can perhaps be of considerable help to shippers, carriers, transport workers, emergency responders and public officials concerned to improve the safety with hazardous materials transportation.

It seems clear that we all have to play catch-up in dealing with the implication of the transportation as well as the storage and recycling or disposal of toxic materials. A case in point: the 43-car Livingston, LA derailment on September 28, 1982 caused not only blast and fireball damage, but also the release of huge amounts of toxic material: "The principal long-term problem to the community and the railroad has been the large-scale absorption by soil in the derailment area of perchloroethylene, a toxic chemical that may be carried in tank cars without head-end or bottom-outlet protection. The National Transportation Safety Board (NTSB) said that the absence of tank car protection contributed to the contamination of the environment". (NTSB), "Safety Information", June 16, 1983)

NTSB officials have said that four or five days passed before there was before there was even any recognition by emergency responders that the released material could be extremely toxic and that containment and mitigation measures should be implemented to prevent long-term hazards to the community.

Accidents and evacuations caused by hazardous materials cargoes continue to pepper the national media coverage. A 1984 study from the Association of American Railroads (AAR), based on historical accident data for the previous ten years, says that in an average year the U.S. will experience 30 "serious" accidents with hazardous rail cargoes alone (each accident involving $100,000 in damages) and two "catastrophic" accidents (each involving damages of more than $1 million).

With an increasing volume of new and exotic chemicals in transport in the U.S. every year, and with the expected "dramatic increase" in high-level nuclear traffic in the coming years, we simply must learn the lessons from accidents experienced. Unfortunately, the major impact of these accidents is felt in widely scattered locations and their lessons often not assimilated in effective ways.

With nuclear shipments, there simply have not been enough shipments, less than 300 per year for the last ten years, to have any confidence in predictions about the safety of future shipments. The only serious accident with nuclear materials, the 1977 derailment of uranium hexafluoride (UF6) canisters in Rockingham, North Carolina, was studied by the National Transportation Safety Board, which documented the chaotic emergency response. Similar ineptness in handling nuclear materials accidents was demonstrated in the recent January 1986 Gore, Oklahoma fatal accident involving the loading of a transport container of UF6.

The 1981 Rockwell International study for the U.S. NRC, NUREG/CR-2225, "An Unconstrained Overview of the Critical Elements in a Model State System for Emergency Response to a Radioactive Transportation Incident," indicates that a medium-sized state should have training, equipment, and personnel costing $5.1 million. No current state is anywhere near being prepared according to these detailed guidelines.

Accidents sometimes mean that old assumptions about what constitutes an adequate level of safety are brought into question. Perhaps the current New York City nuclear fuel routing dilemma can do the same. Certainly the old assumptions of the major nuclear shippers, DOE and the nuclear utilities, are being strongly brought into question as adequate when the result is shipment through the city.

We find the adamant DOE posture in this case to be unwise. In our testimony today we cite the example of Union Carbide as shipper of methyl isocyanate (MIC): the Bhopal tragedy was the occasion for the company to declare publicly that it shipped MIC in the U.S. with very special safety precautions that went far beyond the minimal federal regulations for its transport. Later all the companies shipping MIC found safer ways to use it. We call on DOE as the major shipper of nuclear materials to go beyond current federal requirements in a statesmanlike effort to resolve the nuclear fuel routing crisis in New York City and its environs and in planning for future shipments.

In previous lengthy testimony before the Senate Commerce Committee, "Highway Safety Act of 1983", May 26, June 14, and July 13, 1983, Serial No. 98-35, we described the many useful state and local safety initiatives in regulating nuclear and other hazardous materials cargoes, emergency response costs and needs, and federal attempts at preemption. In important court cases, non-federal initiatives have been upheld.

Here we will outline other issues in shipper responsibility for the hazard assessmment and routing of nuclear and other ultrahazardous cargoes, point out new technologies and opportunities for more rational shipper choices for safer routing, and mention some problems with the current minimum federal regulatory effort and areas for improvement.

DOE AND NUCLEAR UTILITIES HAVE KEY RESPONSIBILITIES AS SHIPPERS OF IRRADIATED FUEL

Let us state at the outset that it is clearly unacceptable for the Department of Energy (DOE) to be planning to route hundreds or even dozens of irradiated fuel shipments by the truck mode from Long Island through New York City if there are in fact safer modes and/or safer routes of transport for this ultrahazardous material. This current situation for the relatively small number of DOE's Brookhaven shipments, which would also presumably hold for hundreds of future DOE shipments to a repository under the Nuclear Waste Policy Act (NWPA) for Long Island Lighting Company (LILCO) irradiated spent fuel from the Shoreham nuclear reactors, violates basis federal safety principles and provides a drastically unhelpful precedent for national policy in the shipment of nuclear wastes.

We call on Congress to require DOE, as a major shipper of nuclear materials currently and in the near future, to assume the responsibility for a complete reevaluation of storage and transportation alternatives for its irradiated fuel and for the choice of the safest storage programs, the safest mode of transport, and the safest routes. We urge the nuclear utilities to support moves in this direction. Such actions by DOE would be the most appropriate way to fulfill its responsibilities under NWPA and would be broadly consistent with federal responsibilities under the Hazardous Materials Transportation Act (HMTA).

DOE has protested that as the shipper of the material, under current federal law it has no responsibility for and no choice in the routing, and that it is the Department of Transportation's (DOT's) nuclear truck routing regulation HM-164 that dictates the route through New York City. Since HM-164 applies only to the carrier of high-level nuclear irradiated fuel choose an Interstate route and the route which minimizes travel time (using an Interstate beltway to avoid urban areas if one is available), DOE is technically correct. Unless New York State and Connecticut can agree on a safer alternative route under HM-164 procedures, it seems the truck carrier of the DOE nuclear shipments is compelled to go through New York City.

DOE's major responsibility for this imbroglio, however, is clear: DOE has chosen the mode of shipment, truck, in full knowledge that the only currently available route is through New York City. If this situation continues, it is a Phyrric victory for DOE. Such an adamant DOE posture can only increase the determination of other interested parties to seek Congressional remedies for the inadequacies of current federal agency policies and practices.

DOT has officially told DOE (in DOT's 1984 comments on the DOE "Mission Plan" for nuclear waste disposal under NWPA) that DOE, as a major shipper of highly radioactive cargoes, certainly could use its contracting process with carriers to direct that those carriers use only those routes that DOE has selected as safest. (Obviously, DOE could also in this process choose the safest modes and select carriers accordingly.) DOE should go the necessary extra mile to win public acceptance for its nuclear shipment programs by developing a comprehensive program of consulting with states and localities on a regional basis to develop preferred routes that in fact are the safest.

Later in this testimony we will outline what we have learned recently about the routing of hazardous cargoes by other major shippers, including Union Carbide and the Department of Defense (DOD), illustrating both the availability of new computerized technologies for choice of safest routing and the lack of systematic use of these by major shippers as well as the lack of adequate federal requirements or guidance even for the shippers of the most hazardous cargoes. It is vital that DOE and other major shippers of ultrahazardous materials take the lead in reaching workable systems of federal and nonfederal regulation, based on two major principles:

- minimization of risks (not just of travel time, as in high-level nuclear waste provisions of HM-164)
- public acceptance

Current nuclear irradiated fuel shipment "campaigns" (that's the term the nuclear utilities use) by DOE and by nuclear utilities are not broadly perceived as well-planned and based on adequate safety technology and routing. On the contrary, they appear to knowledgeable state officials as lacking any broad public policy rationale, and as based merely on the economic convenience of the nuclear utilities involved.

The recent West Valley shipments, for example, exemplified seemingly unnecessary shipments of irradiated fuel from a failed reprocessing facility back to several utility storage pools. The current shipments from Nebraska and Minnesota to Morris Illinois, on the other hand, exemplify shipments from utility pools to a failed reprocessing facility. All perfectly legal, and DOE has no large role in these commercial dealings between utilities, but they illustrate that there is currently no overall sensible public polity for irradiated fuel management. The April 1985 proposal from DOE for a Monitored Retrievable Storage facility in Tennessee, which would necessarily increase the numbers of shipments and the mileage travelled by each irradiated fuel assembly, likewise illustrated that DOE is still lagging in its appreciation of the public's concern for nuclear transportation risks.

Ongoing shipments that seem unnecessary and not well planned by DOE and the nuclear industry and that are pushed through despite widespread public opposition are building up a bitter legacy which is likely to adversely affect future DOE efforts to win public acceptance for such shipments. The numerous cross-country shipments of the entire highly irradiated core of the melted Three Mile Island reactor seem unnecessary for DOE's stated "research" purposes. If you need to study the materials on the moon, you only need some moonrocks, not the whole moon.

In the Taiwan irradiated fuel case, DOE sought to bring the waste back through three different West Coast ports, all of which rejected the shipments. Rather than utilize its own methodologies at Oak Ridge Labs for choice of the safest route, and stick with that decision, DOE followed the path of least resistance, and brought the irradiated fuel to the Savannah River Plant via the Panama Canal and the only port on the East Coast that will accept foreign nuclear waste shipments, Portsmouth, Virginia (in the Norfolk area).

DOE's seemingly intractable posture in these issues is based partly on its position that radioactive transport risks are too low to warrant many of the safety improvements that many states and citizens are pressing for. One example of this instance is that, as an analysis by Dr. Marvin Resnikoff has shown, DOE predictions of the fraction of transport accidents severe enough to cause release of radioactive material have decreased amazingly by a factor of 690 over a seven year period. Predictions by DOE of the amount of material released in severe accidents have declined by a factor of twenty-one or more over a four year period. Partly because DOE is perceived as not taking transportation risks seriously enough, DOE planning for the NWPA shipments has been the target for articulate criticisms by state and groups of states in DOE-funded studies (See especially the 1985 documents and recommendations of Western Interstate Energy Board.

The Association of American Railroads told the nuclear industry, at a 1985 meeting of the Atomic Industrial Forum: "Despite a decade and a half of rhetoric, the railroads are not satisfied that the risks associated with the transport of spent fuel have been adequately identified and quantified; and that those risks will be manageable." Union Pacific testified articulately on the railroads concerns in recent Senate Commerce Committee hearings.

The New York City problem illustrates primarily the lack of and the need for a workable national policy for the increasingly visible and controversial national shipment programs by the nuclear utilities and by DOE of nuclear materials, whether research (e.g., Brookhaven and lots more, including foreign irradiated fuel from research reactors) or nuclear weapons (material, components, assembled) or commercial power plant nuclear wastes (under the Nuclear Waste Policy Act).

Beyond its responsibility for safety choices in mode and routing,it is in DOE's interest to take responsibility for creating a workable conflict resolution mechanism in cases like the New York City situation in which localities or states have seemingly conflicting interests regarding the routing of nuclear cargoes. On the assumption that the long-range interests of everyone are served when the safest modes and routes are chosen for dangerous cargoes, DOE may have to be provided with a Congressionally-mandated procedure for conflict resolution, such that all jurisdictions must participate in discussions towards a solution. But such a new mechanism must be similar to those mandated by Congress for waste disposal planning under NWPA, that is, based on carefully crafted processes and DOE risk assessments of comparative alternatives, and with provisions for thorough participation by affected jurisdictions.

Under the NWPA, Congress gave DOE responsibility for safe shipment and disposal of nuclear irradiated fuel; DOE will take title to the fuel at the plant gate and move it to storage and/or disposal facilities. In the Act, Congress did not address transport issues in detail, understandably enough. The increasingly visible current problems in national regulation may warrant Congressional revisitation of the issues with NWPA amendments in the next year, unless better progress in resolving such problems is noted. Congress in any case needs to keep up vigorous oversight on issues, and especially to keep in touch with state concerns, for example as exemplified in state comments on DOE's Draft Environmental Assessments for potential repository sites.

THE NEW YORK CITY NUCLEAR SHIPMENT SITUATION HIGHLIGHTS BROADER PROBLEMS IN HAZARDOUS MATERIALS TRANSPORTATION

Some of the questions that arise in reflection upon the New York City situation point to broader problems in hazardous materials transportation:

- Could a similar unacceptable situation arise in regard to future DOE shipments of nuclear materials? What does the intractable DOE position on shipments through New York

City portend regarding how DOE will ship under the NWPA and especially whether DOE will accept civilian (DOT and NRC) regulation of the DOE's weapons wastes in transit to the DOE repository?

* Are other major shippers of hazardous materials similarly intent on maintaining traditional shipping routes through New York City or other major metropolitan areas?

* Is the admittedly minimal structure of federal regulations too minimal?

* How can a conflict resolution mechanism be found for cases where densely populated cities wish to reroute shipments of dangerous cargoes in such a way as to be in fact "exporting risks", even if the risks are thereby lowered overall?

* Who decides whether certain ultrahazardous shipments are in fact necessary (or could be eliminated in favor of other storage or treatment options)?

The main underlying problem here for public policy: the lack of clear shipper responsibility for safety and political acceptability of ultrahazardous shipments. What is common between DOE and other major private shippers of the most hazardous cargoes is that these shippers wish to retain as much "management discretion" as possible in key transportation safety decisions:

* determining the need for given shipments

* assessing risks of different modes and routes

* determining levels of safety that will be achieved by various technologies: container designs, routing, placarding, speed limitations

Shippers and carriers therefore have been vigorous in opposing federal, state and local government safety regulation beyond a bare minimum, even in localities like Denver and New York City where recent serious accidents have given public officials brad public support for increased regulation of hazardous cargo routing. The American Trucking Association has also been active in court challenges to virtually every jurisdiction that has recently enacted substantial new legislation: Pennsylvania, New Hampshire, New York City, and Boston among others. Shippers and carriers have also exercised enormous power in influencing even the decisions that have been made in government regulation, for example, in the dominant role played by the railroads in rail tank car safety standards. This example has had particularly disastrous results, as body counts in Waverly, Tennessee and elsewhere have borne out.

As the state of Wisconsin has pointed out in a petition to the Nuclear Regulatory Commission (NRC), there is no public official input in decisions currently made by private nuclear utilities as to whether to ship irradiated fuel to available private storage pools, even if such shipments entail public risks in transit with no corresponding benefit in safer storage. Such a determination of need will be made with NRC guidelines under NWPA only in regard to possible shipments to a federally-operated away-from-reactor storage facility.

The federal government contributes mightily to the lack of public accountability by shippers of dangerous cargoes by its role in insulating these companies from the public. One main mechanism for maintaining virtually complete management discretion in crucial safety decisions is to encourage/tolerate a seemingly pervasive (on paper) but actually token system of minimal federal regulations by industry-dominated federal agencies that allow virtual self-policing by the industries involved. This system allows shippers and carriers to hide behind the skirts of the federal agencies in several ways:

* Preemption: states and localities can be bullied by exaggerated assertions of federal preemption and threats of expensive lawsuits. If states and localities persist in enacting more vigorous regulation, federal agencies and ultimately the Congress are sought out by shippers and carriers for preemptive rulemakings (e.g., DOT's so-called "Inconsistency Rulings") and for amendments to the HMTA that will cut off the currently substantial opportunities for state and local regulation (witness the Hazardous Materials Coalition" proposal in recent sessions).

* Liability: meeting minimal federal standards can shield companies from claims of safety negligence

* Information: if even the federal government with its vast resources does not collect information on some safety topic, e.g., on the flows of truck traffic of the most dangerous cargoes, companies can suggest that states and localities are not appropriate levels for such collection.

Various critical reports in recent years, the result of thorough research by the U.S. Senate Commerce Committee (1979), the U.S. General Accounting Office (1982) and the National Transportation Safety Board (1982), have shown that the federal agencies know nearly nothing of the hazardous materials transportation industry they purport to be regulating. Even the information they pretend to have, e.g., the Hazardous Materials Incident Reporting System on hazardous materials accidents, is so widely acknowledged as so unreliable as to be virtually worthless, and DOT has not even bothered to study how underreported the data are.

The Bhopal disaster in India brought to light in the U.S. the shipment pattern of a single extraordinarily dangerous commodity, methyl isocyanate (MIC), produced by Union Carbide in West

Virginia and distributed by rail and truck to five other U.S. locations and two foreign countries. It seems, however, accurate to assert that no federal official knows the distribution pattern of the several other poisonous liquids and gases in commerce that are similar to MIC in hazardous potential.

Phosgene, for example, the "mustard gas" used against troops in World War I, is more widely used in the chemical industry than MIC, but not as widely as chlorine. The DOT Emergency Response Guidebook evacuation distance tables suggest a downwind evacuation distance of 5.2 miles and 3.3 miles wide for a serious spill of phosgene. Nonetheless, no federal agency tracks the flow of phosgene on highways and rail lines in the U.S., much less tries to assess the safest routes and the adequacy of emergency response capabilities in the communities through which it moves. Will it take a scary accident with phosgene before we learn even where it is?

One egregious example of an attempt by federal agencies to shield shippers of hazardous cargoes from public scrutiny was the ill-fated attempt by the Nuclear Regulatory Commission in 1980 to get Congress to enact legislation that would keep secret the routes of nuclear waste shipments in the U.S. Congress promptly rejected that scheme and mandated public information on routing and prenotification of State Governors.

Some will assert that the liability concerns of shippers constitutes a major force for safety, and that regulation whether federal or nonfederal is a minor factor. This may be true, but not necessarily desirable. There may in fact be some cases in which a particular commodity is considered too dangerous for some major company to handle from a liability perspective, and which is therefore handled and transported by companies which have less to lose -- they are smaller, therefore would be bankrupted by a serious accident without providing adequate compensation to victims.

The minimal federal program both encourages and necessicies increasing safety regulation by states and cities. The federal response is in large part discouraging, and tends to focus narrowly on admonishing cities not to engage in "exporting risks" to other jurisdictions. The New York City nuclear routing case can in this context be seen as a particularly vexing example of an artificially induced crisis in metropolitan relations, because HM-164 allows the shipper to use the less safe mode and route and puts the onus on cities and states to deal with the burdens imposed instead of on the shipper.

The conflict highlights the need for rationality in federal guidance for safety choices by shippers and states or localities. Luckily there are some federal resources and even some reasonable federal policies available for states and cities active in this area. (See my article from the International Fire Chief Magazine, May 1985, attached.)

What is at stake in the New York City routing dilemma that makes DOE so intractable? Despite obvious and corrosive public relations difficulties for DOE, LILCO, and indeed all U.S. nuclear utilities occasioned by the New York City situation, it is a matter of preserving old principles relied on for many years by hazardous cargo shippers:

* With a very few exceptions, all modes of transport are acceptably safe for even very poisonous cargoes, even for shipment through highly populated areas.

* The federal government will specify minimal, but presumably acceptable, levels of safety in packaging. (New York City disagrees, specifying steel tank trucks for hazardous cargoes instead of the aluminum MC-306.)

* There will be very little or no federal regulation or standards or enforcement in any of the other major safety areas: emergency response, routing, enforcement, risk assessment, driver training.

Reversal of this basic shipper stance would be a major change in the status quo. New York City could be the foot in the door, opening up basic arrangements for reexamination the way the Bhopal incident has for the chemical industry.

THE DENVER TORPEDO TRUCK ACCIDENT ILLUSTRATES THE IRRATIONALITY OF FEDERAL HAZMATS ROUTING AND THE PUSH FOR INCREASED REGULATION BY CITIES AND STATES

The recent Denver accident with "war-ready" Navy Torpedoes, and DOD Secretary Weinberger's response to the effect that DOD takes no responsibility for the routing of its hazardous cargoes, leaves many with the impression that the routing of government shipments of hazardous cargoes by various agencies may not be rational, i.e., based on reduction of risks. "What the hell was that Navy torpedo truck doing in the middle of Denver, anyway?"

This was only one of the questions that tens of thousands of Denver motorists and Denver fire officials were able to reflect upon at some length as they sat in what the Governor of Colorado termed "the largest traffic jam in Colorado history" beginning with the Wednesday morning rush hour on August 1, 1984.

Both of the major Denver Interstates, I-70 and I-25, were closed down three to five miles in all directions for eight anxious hours. A truck loaded with six Navy torpedoes, each with 655 pounds of (non-nuclear) Class A explosives, turned over at 5:00 a.m. and slid 104 feet down an exit ramp in the notoriously poorly designed "Mousetrap", the interchange between the two Interstates intersecting in the city of Denver.

The other main question Denver emergency response officials were asking for several hours was: "Where the hell is the Navy (and the Army)?" The Denver Fire Department personnel were prompt and competent on the accident scene, but were in need of expert advice on what they were dealing with (an unknown liquid was leaking from the truck) and how big an area to evacuate. They called the three emergency numbers supplied on the truck's shipping papers; none answered. CHEMTREC put the Fire Chief in touch with a Navy duty officer in Washington, DC, who could only advise by phone that the torpedo warheads were not armed, but that the firefighters should not try to upright the truck.

Worried Denver officials began a limited and conservative evacuation of local residents at 9:00 a.m. The Navy explosives experts finally arrived into Denver by commercial airline from California at 2:00 p.m., nine hours after the accident. The Army's experts flew in from a base only 80 miles away, arriving by "Huey" helicopter nearly four hours after they had been notified. The truck was eventually uprighted safely and towed to the Rocky Mountain Arsenal.

No one got hurt, but tens of thousands got their attention focussed on the irrational routing of hazardous cargoes through major cities and on the serious gaps in federal emergency response capabilities. Denver's Mayor Pena fired off a letter expressing his "outrage" to President Reagan, questioning why the 1.5 million people of the Denver area should be exposed to the risks of "nuclear, hazardous and other dangerous materials" being transported on major highways through the city. He labeled the federal response to the torpedo accident "grossly negligent", and said that "national security" would no longer be a cloak over federal shipments of dangerous cargoes through Denver.

The potential for catastrophic transportation accidents in densely populated areas was shown in the July 1978 explosion of a truck carrying Liquefied Petroleum Gas on a road next to a crowded trailer camp in Tortosa, Spain: 200 people were killed instantly and 120 more were burned severely. In the U.S., what looks like a reasonably safe operating record over a period of time an to bust in a hurry, as evidenced in the three big rail explosions in 1977, by Amtrak's recent accidents and by the Burlington Northern's three fatal train collisions within three month in mid-1984.

"There oughta be a law." There is a federal law, it turns out (49 CFR 397.9), almost completely ignored by the trucking industry, that says trucks carrying hazardous materials cargoes should not go through cities. The language of the law is quite strong: such hazardous cargoes must "not go through or near heavily populated areas, places where crowds are assembled, tunnels, narrow streets, or alleys," unless there is no "practicable alternative" from a safety standpoint. "Operating convenience is not a basis [for the shipper of hazardous cargoes] for determining whether it is practicable" to avoid such places of high risk where a serous accident could have catastrophic results.

This is the only federal hazardous materials routing rule, and has been on the books since 1940, in the form of an old Interstate Commerce Commission rule. In 1950 a Federal District Court case (U.S. v. Boyce Motor Lines, 90 Fed. Supp. 966 (1950), discussed the rule and concluded it was invalid "because of its failure to define an ascertainable standard of guilt" (i.e., too vague).

In 1969, however, as a result of "a number of near disasters..." (see Federal Register, March 13, 1971, pp. 4874 ff.) DOT regulators rewrote the rule expressly to remedy the vagueness problem, and the outcome was the "operating convenience" provision. DOT has no idea of what routes are actually used by truckers of hazardous materials, not even collecting the route plans required to be devised by the companies carrying explosives in compliance with 397.9 (b). DOT has never studied the extent of compliance with 397.9

Congress specifically upheld the 397.9 routing rule in 1984, in Section 206 (b) of the Motor Carrier Safety Act of 1984, Public Law 98-554, 98 Stat. 2829; see Congressional Record, October 11, 1984, p. S 14380). Several states and cities have adopted 397.9 and other parts of 49 CFR regulations on hazardous materials safety.

The torpedo truck that overturned in Denver was headed from a Navy submarine facility at Keyport in Washington State to the sub base at Groton, Connecticut. The driver was following a handscrawled route plan she had taken by telephone from her dispatcher, which mysteriously directed her to dip down south two Interstates and go through Denver.

The trucking company which took the six Navy torpedoes through Denver could be cited for routing violations by the city of Denver and the sate of Colorado, since both jurisdictions have adopted the federal law. But if the federal Department of Transportation (DOT) were to cite the company, it would be the first such citation issued by DOT since the law was rewritten in 1969, according to documents obtained from DOT under the Freedom of Information Act. With such obvious non-enforcement, it is no wonder that the federal law can be treated with contempt by the trucking industry. And no wonder that states and localities are increasingly determined to enact heir own local regulations to protect public health and safety from the risks of the increasing volumes of dangerous cargoes on the rails and highways. Fire chiefs usually spearpoint the cities' efforts along these lines.

The railroad industry carries the most hazardous cargoes, huge jumbo tank cars, right through densely populated cities, without any federal routing regulations at all. After a series of disastrous explosions of rail tank cars were belatedly retrofitted with new safety devices. An aroused Congress also directed the DOT to study the feasibility of avoiding populated areas with dangerous rail cars. The DOT studies say that in some cities such rerouting could substantially reduce the risk of catastrophic accidents, and DOT has produced the computer databases that the major shippers of hazardous cargoes (i.e., chemical companies, nuclear utilities, the military) could be using to make rational routing choices for their most hazardous cargoes. (We discussed this research at length in our Senate Commerce Committee testimony cited earlier.)

We simply do not now whether any are doing so. The trucking companies and railroads are free to choose their own routes. It may be that after an initial period of substantial noncompliance with HM-164 discovered by DOT in paper reviews of route plans submitted by truckers, most truckers are now at least using Interstate beltways to avoid cities. But who knows if using routes to minimize time in transit, as directed by HM-164, results in routes which minimize risks: e.g., avoiding population centers and transport corridors with high accident rates?

Union Carbide will not reveal its shipping routes for MIC. Secretary of Defense Weinberger said after the Denver accident that the DOD "issues no specific instructions to motor carriers regarding routes" and accepts no responsibility for the routing of shipments of military explosives and other hazardous materials. It is no longer a secret that the highly visible and much-protested nuclear weapons "White Trains", shipped by the Department of Energy, have moved through major cities. Less is known about whether the better-disguised nuclear weapons trucks try to avoid cities.

The terribly slow response times of federal emergency experts in the Denver case is important and disheartening evidence., The shippers of nuclear wastes, military weapons, and other highly hazardous cargoes make no pretense that the local firefighters who have to respond first to an accident have adequate training to handle serious problems. And the shippers and carriers resist fees that could pay for substantially raising the standard of training and equipment for emergency responders. Instead there will be within easy range to help out in any serious situation. The Denver experience raises some doubts about that notion.

Eighty percent of the firefighters in the U.S. are members of volunteer departments, hardly well-trained in emergency response to serious accidents. In 1977 a derailed and leaking tank car being monitored by firefighters in Waverly Tennessee blew up after two days, killing 19 fire service personnel and levelling the town. Even in major cities, the professional fire service often cannot deal adequately with the chaotic conditions in real accidents involving serious spills of one of the many new exotic dangerous materials being shipped in bulk. The fire chief in

Somerville, Massachusetts, a suburb of Boston, on the scene of a derailed tank car spilling phosphorus trichloride in 1980, had 30 experts from industry and government giving him conflicting advice for six hours. He followed the federal guidelines and sprayed water on the tank car three times, each time creating an acid cloud that eventually forced the evacuation of thirty thousand people. His comment in retrospect: "Boy, we sure learned the hard way that was the wrong thing to do."

Cincinnati, Ohio recently started fining truckers of hazardous cargoes $75 for taking the Interstate-75 route through the city instead of the beltway route around, which a regional government study showed to be safer. Dallas, Houston, Boston, Portland, and New York City all have routing regulations and/or curfews on transport of hazardous cargoes. Of course the chemical and trucking industries, federal officials, and overworked city attorneys often recite the myth that the federal government inevitably crushes such regulations as too burdensome on Interstate Commerce. But knowledgeable officials and citizens can challenge that myth by referring to recent important U.S. Court of Appeals decisions upholding safety rules imposed on truckers by Pennsylvania, New Hampshire, and New York City. Cities and states in fact under the Hazardous Materials Transportation Act of 1974 have considerable latitude in imposing rational routing choices on the shippers of the most hazardous cargoes and in raising the funds for adequate training and equipment.

In April of 1985 the Denver City Council unanimously enacted a strong permit and routing ordinance on hazardous materials transportation, nuclear and non-nuclear, rail and highway. Only the expenditure of much political capital by the trucking industry prevented a new state law from being passed simultaneously in Colorado. The public is increasingly intolerant of the shippers of the most hazardous cargoes who impose risks on cities and other high-risk areas. Opposition to high-level nuclear waste shipments is especially evident, yet a big increase in such shipments is just beginning. Chlorine, LPG, gasoline and other cargoes of course pose their own risks of serious accidents.

Relying mostly on industry and federal agencies to protect the public from risks of these cargoes seems unwise. Local and state officials, responsible to those who suffer injuries and to those who must respond to accidents, can impose a rational routing system: shippers should have to show that they have used an acceptable method of choosing the safest routes. All high-risk areas cannot be avoided even by the most dangerous cargoes, but those shippers who put cities at risk by using them as corridors for their hazardous shipments (often with no origin nor destination within the city) should pay permit fees ("user fees") to fund adequate safety regulation and emergency response training and equipment.

SOME LESSONS ABOUT ULTRAHAZARDOUS CARGOES LEARNED IN THE U.S. BECAUSE OF THE BHOPAL DISASTER

Reverberations from the Bhopal disaster have been felt in the U.S. hazardous materials transportation sector and already are having an impact on federal regulation. After Bhopal the National Transportation Safety Board (NTSB) promptly criticized the current DOT regulations for shipping MIC and similar materials as inadequate; DOT agreed and has now revised its regulations, in Docket HM-196 covering materials "poisonous by inhalation" (not to the full satisfaction of NTSB).

Union Carbide and FMC Corporation, shippers of MIC in the U.S., both declared loudly after Bhopal that they shipped MIC in ways that are significantly more safe than the "minimal federal regulations" require. Both companies say they used special containers, special placarding, and special routing technologies to avoid densely populated areas and areas with high accident rates. Carbide goes beyond what they consider insufficient federal requirements in using special portable, doubt-walled transportation tanks (3000 gallon capacity) carried on flat-bed "low-boy" trucks and using special "POISON B" AND "CORROSIVE" placards in addition to the "FLAMMABLE LIQUID" placard required by current DOT regulations.

Some interesting questions arise:

* Will these companies share with federal and local officials information on exactly what routing technology they are using, and what the routing results are? So far Union Carbide and other companies which use the state-of-the-art routing technology, have refused to do so in response to EPI inquiries. (There are **sophisticated computer databases available** inn the private sector that are specifically designed to enable chemical companies and other large shippers of hazardous cargoes to choose the safest routes. **ALK Associates, Inc.**, for example, of Princeton, NJ, sends out a very impressive "Railroad Hazardous Materials Routing Package" and lists among its clients Union Carbide, Monsanto, Dupont, North American Van Lines, Burlington Northern Railroads, and the Federal Railroad Administration/U.S. DOT.) Why should a city or state tolerate exposure to the risks of extremely dangerous shipments (or storage sites) unless the shipper can show that other major alternatives have been considered and the safest one chosen?

* If the federal regulations are widely viewed as minimal, might not some companies less well-heeled than Union Carbide in fact be shipping poisonous and other dangerous cargoes in inadequate containers and with inadequate

attention to hazard identification and through cities?

Comments by major chemical companies and by NTSB on the DOT Docket HM-196 likewise raised pointed questions about DOT safety standards for the most hazardous cargoes:

* If so many special precautions [see FMC comment] are taken by shippers of MIC, what about the other chemicals similar in hazard (several are listed by companies in their comments)?

* Is the HM-196 rule too narrow in scope, e.g., excluding acrolein and fuming nitric acid which have similar hazards to MIC [NTSB] or too unwieldy [3M Company, Southern Pacific] or does the rule set an unduly high threshold of toxicity [NTSB]?

In fact, subsequent post-Bhopal developments illustrate both that public scrutiny can impel chemical companies to drastically reduce risks in hazardous materials transport, and illustrate how minimal is public input in current risk management decisions. One day before Bhopal, Union Carbide regularly transported MIC to five different user facilities in the U.S., including the FMC facility at Middleport N.Y. where, before Bhopal, the toxic cloud from an MIC release was drawn in by the ventilation system of the school only 100 yards away and sent 200 pupils to the fire station to have their eyes washed out.

One year after Bhopal, MIC was not transported at all. All the companies suddenly implemented safer ways to make their products. FMC Corporation says it reduced MIC transportation risks by moving its New York facility into the "Chemical Valley", the Kanawha River Valley of West Virginia, to a new site right next to the Carbide facility at Institute, presumably an increase in risk for that meteorologically-unfavorable area. Union Carbide says it reduced risks in the Kanawha Valley (and chemical transportation risks) by building a new acrolein plant in Taft, LA.

Maybe these were good decisions. But does anyone think the citizens of West Virginia or Louisiana were genuinely consulted about company decisions to build still more dangerous facilities in their communities? And who is responsible for deciding if the overall public safety is lessened or increased when companies decide abruptly to move chemical production around the "Monopoly" playing board like this -- to other states or even to Third World nations? No one. No federal or state or local government agency is minding the store on chemical hazards generally.

Perhaps there are some other very dangerous cargoes that a hard look from public officials would indicate do not need to be transported at all. No federal agency, as far as we know, feels responsible or capable of making such overall risk management decisions in the public interest.

One indicator of this problem is that there is currently no federally sanctioned "short list" of the most dangerous cargoes in transport or storage, such that federal officials might have a priority list of cargoes about which to do routing studies or special attention or regulation. A few years ago DOT abandoned an attempt to put together such a list in a regulatory way, but there are three existing federal lists that are possible places to start:

* The Coast Guard's very short list of "Cargoes of Particular Hazard" when carried in bulk by ship or barge.

* The list of 50 chemicals in the "Evacuation Tables for Selected Hazardous Materials" in the DOT Emergency Response Guidebook (the "orange book"), 1984 edition.

* The chemicals listed as requiring Package Group I containment under the United Nations system (see DOT's Optional Hazardous Materials Table, 49 Code of Federal Regulations 172.102, column (6).

There are also several studies that rank the hazards of numerous cargoes, for example, a 1985 study by Karch & Associates of Washington, D.C. (202) 667-3031 for Union Pacific Railroad, "Evaluation and Ranking of Chemicals Carried by the Union Pacific System for the Potential to Cause Acute Lethality in a Surrounding Community after a Large Spill", and a different ranking system created by the Association of American Railroads. The Karch study prompted Conrail to attempt to "flag out" of carrying twelve of the most dangerous cargoes; Conrail wanted to force the shippers of these cargoes to pay for "special train treatment". This move was challenged before the Interstate Commerce Commission by the Chemical Manufacturers Association, which prevailed.

"Special train treatment" is currently given voluntarily, or by agreement with the nuclear utilities, by the railroads when they ship nuclear irradiated fuel. DOE perhaps pays for special train treatment when they ship the nuclear weapons White Trains. It would be useful if the federal government had done a study to determine the relative safety of regular train, special train, and dedicated train services.

All over the world, after Bhopal, officials are devising priority "short lists" for additional regulation, with beginning efforts to specify chemicals requiring special attention. Such efforts have been conducted by the World Bank, the British Health and Safety officials, and the U.S. Environmental Protection Agency.

We urge Congress to investigate ways to see that a useful short list is developed for the most hazardous cargoes, and that at least a few flow studies are conducted to survey the overall system of distribution/transportation/storage of some of the most dangerous cargoes. Such case studies would ascertain, at a minimum, if such cargoes are routinely through densely populated areas in violation of 49 CFR 397.9, and might will be accompanied by some pilot efforts in a few cities to develop model enforcement programs that could assist nonfederal jurisdictions who desire to enforce that regulation.

CONCLUSION

As we see the HMTA, it is strongly and clearly:

(a) a safety act (not a keep-the-cargoes-rolling through uniformity act)

(b) an act that sets out a balanced partnership arrangement between feds and state/local regulators (not blunt and total federal preemption)

So any redirection of federal policy here has to be not only technically working towards safety, but also broadly politically acceptable to state and local officials who realize they have a role in hazardous materials transportation regulation.

The public and public officials are going to take actions to control major chemical hazards, as evidenced by actions already taken by such parties as the European Community (the Seveso Directive mandating new regulations in every European nation), local officials in Santa Clara and Los Angeles, California, and the New Jersey Department of Environmental Protection (the short list for vigorous regulation was initially six chemicals and is being expanded). Shippers of very hazardous cargoes, including the DOE, can ill afford to rely on outmoded and static assumptions and continue to resist a vigorous public sector role.

Finally, even if there were no realistic expectation of substantial new federal help to state and local jurisdictions in improving the safety of hazardous materials transportation, at least one could hope that the federal government will not hinder their efforts with new preemptive legislation and rulemaking.

COMMENTS ON PENDING LEGISLATION ON HAZARDOUS MATERIALS TRANSPORTATION RELATED TO NUCLEAR TRANSPORT

S. 833: We are in agreement with the basic thrust of this bill to minimize the risks of a high-consequence accident. We would suggest, however, that in the first instance the burden should be put on the shippers of nuclear irradiated fuel and other ultrahazardous cargoes to analyze and choose the safest routes and modes, with the burdens for corridor cities and states being limited to assessing the shippers' choices and having the authority to order changes if warranted.

S. 1008: We agree with the overall regulation provisions of this bill. There is a need to specify some standards for the emergency response planning and for the hazard assessments called for. The bill seems not to actually require use of the safest routes, which we would urge as an amendment.

We feel that the bill should be cast as an amendment to the HMTA, rather than to the Atomic Energy Act.

S. 1269: We support both the overall hazardous materials transportation and the specifically nuclear transportation provisions of this bill, with the exception as noted in regards to S. 833 that the burden should initially be on the shippers. Also in section 407 "hazardous materials" is defined too broadly. As discussed above, a smaller sample ("short list") of hazardous materials should be devised for special attention. A still smaller list would be necessary for section 9 flow studies, but we are not confident that the use of double-placarded cargoes will be optimal.

We think the bill could be strengthened by an effort to add some provisions that would bring the transport sector into line with the other aspects of the chemical industry and include this sector in the Superfund Title III process for "Community Right-To-Know and Emergency Planning."

We think the use of the safest routes for nuclear irradiated fuel and other ultrahazardous cargoes should be mandated.

We urge Congress to require DOE and other federal agencies to implement the "ALARA" ("as low as reasonably achievable") principle for occupational radiation protection in the transportation sector, which has never been done. We understand DOE is doing a study on this currently.

It would be useful to amend the Federal Rail Safety Act to allow states participating in the federal rail safety program to do hazardous materials planning, enforcement, and training, and to explicitly guarantee the rights of states and localities to have a say in safest routing.

It would be useful if DOT would do substantial pilot studies to help states and cities:

1. in the enforcement of 49 CFR 397.9

2. in developing user fees to fund hazmats programs

TESTIMONY OF
DENNIS A. BECHTEL, COORDINATOR

CLARK COUNTY
DEPARTMENT OF COMPREHENSIVE PLANNING

TO THE
U.S. ENVIRONMENT AND PUBLIC WORKS COMMITTEE
SUBCOMMITTEE ON NUCLEAR REGULATIONS

WASHINGTON, D.C.

JUNE 3, 1987

MY NAME IS DENNIS BECHTEL. I AM A PLANNING COORDINATOR FOR THE CLARK COUNTY DEPARTMENT OF COMPREHENSIVE PLANNING IN LAS VEGAS, NEVADA. I WOULD LIKE TO THANK THE SUBCOMMITTEE FOR THE OPPORTUNITY TO TESTIFY THIS MORNING.

I WOULD LIKE TO NOTE FOR THE RECORD THAT COMMISSIONER THALIA DONDERO OF THE CLARK COUNTY COMMISSION, A MEMBER OF THE NATIONAL ASSOCIATION OF COUNTIES AND THE STATE OF NEVADA COMMISSION ON NUCLEAR PROJECTS HAD WISHED TO BE HERE TODAY BUT HAD A PRIOR COMMITMENT. MY PRESENCE HERE TODAY IS TO CONFIRM HER AND THE REST OF THE CLARK COUNTY, NEVADA, COMMISSION'S CONCERN ABOUT THE NUCLEAR WASTE REPOSITORY PROGRAM IN GENERAL AND SPECIFICALLY WITH REFERENCE TO THE TRANSPORT OF NUCLEAR WASTE.

ONE OF MY RESPONSIBILITIES AS PLANNING COORDINATOR IS TO SERVE AS A MEMBER FROM CLARK COUNTY, OF THE NEVADA STATE AND LOCAL PLANNING GROUP, COMPRISED OF MEMBERS FROM LINCOLN, NYE AND CLARK COUNTIES AND THE INCORPORATED CITIES OF HENDERSON, LAS VEGAS AND NORTH LAS VEGAS. THE DUTIES OF THE COMMITTEE HAS INCLUDED DEVELOPING A PROGRAM TO EVALUATE THE POTENTIAL IMPACTS OF A NUCLEAR WASTE REPOSITORY INCLUDING THE TRANSPORTATION OF THE NUCLEAR WASTE MATERIAL ON COMMUNITIES IN SOUTHERN NEVADA.

AS A GENERAL COMMENT, I WOULD LIKE TO SAY THAT THE TRANSPORTATION OF HIGH-LEVEL RADIOACTIVE WASTE AND SPENT FUEL SHOULD BE GIVEN GREATER EMPHASIS THAN IT HAS HERETOFORE IN THE DEVELOPMENT OF THE REPOSITORY PROGRAM. WE'RE PLEASED TO SEE THE INTRODUCTION OF A NUMBER OF BILLS BY THE SENATE SPECIFICALLY ADDRESSING THE TRANSPORTATION OF THE MATERIAL. ONCE THE REPOSITORY IS SELECTED, IF IT IS TO BE SELECTED, AND ONCE THE SHIPMENTS BEGIN TO BE TRANSPORTED, THESE SHIPMENTS HAVE THE POTENTIAL OF AFFECTING A LARGE NUMBER OF INDIVIDUALS AND COMMUNITIES THROUGHOUT THE UNITED STATES. IT SHOULD BE CONDUCTED IN A MANNER, THEREFORE, THAT IS VERY SENSITIVE TO THE POTENTIAL DANGERS TO THE PUBLIC OF THE SHIPMENT OF A HIGHLY-TOXIC MATERIAL.

ALTHOUGH MY COMMENTS TODAY REFLECT THE CONCERNS OF CLARK COUNTY, THEY COULD BE APPLIED TO MANY COMMUNITIES THROUGHOUT THE COUNTRY.

TO PLACE MY COMMENTS IN CONTEXT, I WOULD LIKE TO DESCRIBE CLARK COUNTY AND ITS RELATIONSHIP TO THE PROPOSED YUCCA MOUNTAIN REPOSITORY. CLARK COUNTY'S CLOSEST COMMUNITY TO THE SITE, INDIAN SPRINGS, IS APPROXIMATELY 20 MILES FROM YUCCA MOUNTAIN; THE CITY OF LAS VEGAS, A MAJOR METROPOLITAN AREA WITH 60% OF NEVADA'S POPULATION, AND SOME 600,000 PEOPLE (A POPULATION THAT WILL GROW TO OVER A MILLION BY THE TIME OF THE OPENING OF A REPOSITORY), IS ABOUT 100 MILES FROM THE PROPOSED REPOSITORY. ATTACHMENT 1 IS A MAP THAT ILLUSTRATES THE LOCATION OF CLARK COUNTY TO THE SITE.

IF WE'RE SOME 100 MILES AWAY, THEN WHAT ARE OUR CONCERNS? I'VE ORGANIZED MY COMMENTS BY MAKING A STATEMENT DESCRIBING DOE POLICY ON TRANSPORTATION, THEN RELATING CLARK COUNTY'S CONCERNS (AS WELL AS INCORPORATED CITIES IN CLARK COUNTY'S) FOLLOWED BY OUR RECOMMENDATIONS.

(1) THE DEPARTMENT OF ENERGY (DOE) IS UTILIZING DEPARTMENT OF TRANSPORTATION (DOT) REGULATIONS, SPECIFICALLY HM-164, IN THE REGULATION OF NUCLEAR WASTE SHIPMENTS. HM-164 BASICALLY REQUIRES THAT SHIPMENTS OF HIGHWAY-CONTROLLED MATERIAL UTILIZE INTERSTATE HIGHWAYS OR STATE DESIGNATED ROUTES. STATE DESIGNATED ROUTES (TO BE MADE IN CONSULTATION WITH LOCAL COMMUNITIES) MUST PASS THE TEST OF NOT INCREASING THE DISTANCE THAT THE SHIPMENTS MUST TRAVEL TO THE FINAL POINT OF DISPOSITION AMONG OTHER CONSIDERATIONS.

CLARK COUNTY'S CONCERNS. A STRICT ADHERENCE TO DOT REGULATIONS WILL RESULT IN NUMEROUS SHIPMENTS OF NUCLEAR WASTE BEING TRANSPORTED THROUGH DOWNTOWN LAS VEGAS, THE MOST DENSELY TRAFFICKED AREA IN OUR COMMUNITY. THAT THIS IS ONE OPTION BEING CONSIDERED BY DOE CAN BE READILY

SEEN BY THE TRANSPORTATION ANALYSIS PROVIDED IN DOE'S FINAL ENVIRONMENTAL ASSESSMENT. I HAVE INCLUDED THIS AS ATTACHMENT 2. THE MAGNITUDE OF THE CONCERN CAN BE SEEN IN THE NUMBER OF POTENTIAL SHIPMENTS THAT COULD TRAVERSE OUR AREA. ALTHOUGH NUMEROUS COMMUNITIES THROUGHOUT THE U.S. HAVE BELTWAYS TO ENABLE SHIPMENTS TO COMPLY WITH DOT, THIS IS NOT THE CASE WITH COMMUNITIES SUCH AS LAS VEGAS WITH ONLY A SINGLE INTERSTATE AND NO ALTERNATIVES THAT WOULD AVOID DENSELY-POPULATED, DENSELY TRAFFICKED AREAS.

RECOMMENDATION. DOE IS CURRENTLY OPERATING UNDER THE PREMISE THAT THE CASKS USED TO TRANSPORT NUCLEAR WASTE WILL NOT RELEASE HAZARDOUS MATERIAL TO THE ENVIRONMENT AND CONSEQUENTLY NOT ENDANGER THE PUBLIC. THEY POINT TO THEIR ADMITTEDLY COMMENDABLE RECORD OF TRANSPORT TO DATE. THE INCREASED NUMBER OF CASKS AND SHIPMENTS, HOWEVER, ESPECIALLY THROUGH HEAVILY TRAFFICKED URBAN AREAS INCREASES THE POTENTIAL FOR ACCIDENTS AND RELEASES OF MATERIAL. DOE SHOULD, THEREFORE, AVOID INTERSTATES TRAVERSING URBANIZED AREAS, ESPECIALLY THOSE IN COMMUNITIES SUCH AS LAS VEGAS WHERE THERE IS NO OTHER OPTION. ALTHOUGH CIRCUMVENTING THE LAS VEGAS URBAN AREA MAY INCREASE THE TOTAL DISTANCE OF THE SHIPMENTS, THE ALTERNATIVE WITH ITS POTENTIAL FOR REAL OR PERCEIVED DAMAGE TO THE PUBLIC IS NOT ACCEPTABLE.

IN THIS REGARD, CLARK COUNTY IS HIGHLY SUPPORTIVE OF S.833, "THE NUCLEAR WASTE TRANSPORTATION PROHIBITION THROUGH URBANIZED AREAS ACT OF 1987", WHICH AS WE UNDERSTAND WOULD PROVIDE LOCAL COMMUNITIES WITH THE OPPORTUNITY TO DESIGNATE ROUTES THAT WOULD AVOID URBANIZED AREAS AND THE POTENTIAL FOR ACCIDENTS AND DANGER TO THE PUBLIC.

(2) DOE IS CONCERNED WITH STRICTLY ADHERING TO DOT CRITERIA. IT APPARENTLY DOES NOT CONSIDER THE IMPLICATIONS OF ITS ROUTING DECISIONS.

CLARK COUNTY'S CONCERNS. RELATED IN PART TO THE SITUATION IN THE PREVIOUS EXAMPLE IS DOE'S APPARENT LACK OF SENSITIVITY IN ROUTING DECISIONS. ON NUMEROUS OCCASIONS, THE LAST BEING THE FINAL ENVIRONMENTAL

ASSESSMENT (REFER AGAIN TO ATTACHMENTS 1 AND 2, ROUTE 93), FOR EXAMPLE, DOE HAS NOTED THAT IT INTENDS USING THE ROUTE OVER HOOVER DAM TO TRANSPORT SHIPMENT OF NUCLEAR WASTE. THE ROAD IS WINDING, TREACHEROUS, AND THE SCENE OF NUMEROUS ACCIDENTS OF TRUCKS AND CARS EACH YEAR. LIKEWISE, IT IS A TOURIST AREA, WITH THOUSANDS OF VISITORS ANNUALLY OFTEN CREATING CONDITIONS FOR AN ACCIDENT. A NUMBER OF TRUCK ACCIDENTS HAVE COME CLOSE TO OVERTOPPING THE DAM AND FALLING INTO THE COLORADO RIVER. IN ADDITION TO THE POTENTIAL IMPLICATIONS FROM AN ACCIDENT, THE COLORADO RIVER IS A WATER SUPPLY FOR MILLIONS OF PEOPLE AS WELL AS A RIVER SUBJECT TO THE CONDITIONS OF AN INTERNATIONAL TREATY WITH MEXICO.

RECOMMENDATION. HOOVER DAM SHOULD NOT BE USED AS A TRANSPORT ROUTE FOR NUCLEAR MATERIALS. LIKEWISE, SIMILAR AREAS OF SENSITIVITY (ONE EXAMPLE BEING THE EISENHOWER TUNNEL IN COLORADO) IN OTHER AREAS OF THE COUNTRY SHOULD BE SIMILARLY AVOIDED. ROUTING OFTEN CANNOT BE REDUCED TO A SIMPLE FORMULA SUCH AS PRESCRIBED IN DOT REGULATIONS. ROUTING DECISIONS SHOULD TAKE INTO CONSIDERATION THE UNIQUE CIRCUMSTANCES PRESENT IN INDIVIDUAL AREAS OF THE COUNTRY. THIS WILL UNDOUBTEDLY COMPLICATE THE SELECTION OF A ROUTE FOR THE RADIOACTIVE MATERIAL. IT IS THE ONLY WAY, HOWEVER, TO MINIMIZE RISK TO THE PUBLIC.

(3) THE DEFENSE AND CIVILIAN PROGRAMS FOR THE TRANSPORT OF NUCLEAR WASTES ARE CURRENTLY OPERATING INDEPENDENTLY.

CLARK COUNTY'S CONCERNS. DEFENSE SHIPMENTS TO THE WASTE ISOLATION PILOT PROJECT (WIPP) IN NEW MEXICO FROM FACILITIES SUCH AS HANFORD, WASHINGTON, THE ROCKY MOUNTAIN ARSENAL AS WELL AS FROM THE NEVADA TEST SITE WILL BEGIN IN 1989. THESE, WE UNDERSTAND, ARE UNCLASSIFIED SHIPMENTS. AS WITH THE PROPOSED CIVILIAN SHIPMENTS, DOE IS CONSIDERING USING DOT ROUTING REGULATIONS AND WOULD TRANSPORT THE WASTE ON I-15 THROUGH LAS VEGAS AND OVER HOOVER DAM. OUR CONCERN THEN IS THAT THE DEFENSE SHIPMENTS ALTHOUGH CONSIDERED BY DOE AS AN ENTIRELY DIFFERENT PROGRAM, WILL CREATE PRECEDENTS OF ROUTING THAT WILL THEN BE EMPLOYED IN THE LATER CIVILIAN NUCLEAR WASTE PROGRAM.

RECOMMENDATION. THE CIVILIAN AND DEFENSE PROGRAMS FOR THE TRANSPORT OF NUCLEAR WASTE SHOULD BE COORDINATED CLOSELY. IN THE CASE OF CLARK COUNTY, THIS WOULD MEAN THAT WIPP SHIPMENTS, ALTHOUGH FEW IN NUMBER, SHOULD AVOID THE LAS VEGAS METROPOLITAN AREA. A ROUTING ANALYSIS (OF WHICH MODELS ARE AVAILABLE) SHOULD BE PERFORMED TO TEST WHAT IS IN FACT THE SAFEST ROUTE FOR BOTH PROGRAMS. I ONLY MENTION THE ROUTING ANALYSIS BECAUSE THE WIPP OFFICE HAS STATED THAT THEY WOULD BE WILLING TO DO THE ANALYSIS BUT THAT IT PROBABLY WOULDN'T CHANGE THEIR DECISION (E.G. THEY FEEL THAT THE SHIPMENTS WILL NOT CAUSE A PROBLEM AND, THEREFORE, THE DOT REGULATIONS SHOULD BE EMPLOYED IMPLICITLY).

(4) LOCAL COMMUNITIES ARE THE FIRST LINE OF DEFENSE IN THE EVENT OF AN ACCIDENT. LOCAL COMMUNITIES SHOULD HAVE THE PROPER EQUIPMENT TO ENSURE THAT THEY HAVE THE ABILITY TO UNDERTAKE THAT TASK.

CLARK COUNTY'S CONCERNS. THAT SUFFICIENT EQUIPMENT AND TRAINING ARE AVAILABLE TO ENABLE CLARK COUNTY (AND OTHER AREAS) TO PERFORM A SUFFICIENT JOB TO PROTECT ITS CITIZENS.

RECOMMENDATION. THAT THE DOE WORK CLOSELY WITH LOCAL GOVERNMENTS TO ENSURE THAT THEY ARE PROPERLY EQUIPPED AND PERSONNEL TRAINED TO ENABLE THE EMERGENCY RESPONSE TASK TO BE PERFORMED IN A TIMELY AND EFFICIENT MANNER. IN EXAMINING S.126, WE ARE PLEASED TO NOTE IN SECTION 7, A PROVISION THAT WOULD PROVIDE GRANTS TO STATES AND POLITICAL SUBDIVISIONS TO ASSIST IN EMERGENCY RESPONSE TRAINING. THIS WE HIGHLY SUPPORT. WE ALSO FEEL THAT THIS SHOULD BE EXPANDED TO INCLUDE FUNDING FOR THE PURCHASE OF EQUIPMENT AS WELL.

(5) THE RENEWAL OF THE PRICE/ANDERSON ACT, WHICH PROVIDES FUNDING FOR A NUCLEAR WASTE ACCIDENT AND RELATES IN PART TO THE LIABILITY OF NUCLEAR WASTE SHIPMENTS, IS IMPORTANT TO ENSURE THAT ADEQUATE FINANCIAL RESOURCES ARE AVAILABLE, IN A TIMELY MANNER, TO AMELIORATE THE CONDITIONS OF POTENTIAL ACCIDENTS.

CLARK COUNTY'S CONCERNS. THAT COMPLEX RED TAPE AND INADEQUATE FINANCIAL RESOURCES WILL NOT DELAY CORRECTING THE RESULTS OF AN ACCIDENT.

RECOMMENDATION. SUFFICIENT FINANCIAL RESOURCES SHOULD BE MADE AVAILABLE TO AMELIORATE THE RESULTS OF AN ACCIDENT IN A TIMELY MANNER. OTHER CONCERNS WOULD INCLUDE THAT FUNDING BE MADE AVAILABLE TO PAY FOR PREVENTIVE EVACUATIONS WHERE NO RELEASE WOULD OCCUR, AND ENSURING THAT PAYMENTS FOR DAMAGES WOULD TAKE PLACE EVEN FOR A SHIPMENT THAT STRAYED FROM AN APPROVED ROUTE (THESE ARE REVISIONS PROPOSED IN SEVERAL VERSIONS OF AMENDED PRICE/ANDERSON PROVISIONS THAT WE HIGHLY SUPPORT).

(6) THE NUCLEAR WASTE POLICY ACT IS EXPLICIT IN REQUIRING INTERACTION WITH STATES AND INDIAN TRIBES; THE NWPA HAS MINIMAL PROVISIONS REQUIRING INTERACTION WITH LOCAL ENTITIES, HOWEVER.

CLARK COUNTY'S CONCERNS. THAT LOCAL COMMUNITIES WILL NOT HAVE AN OPPORTUNITY TO WORK WITH DOE TO DECIDE ROUTING QUESTIONS.

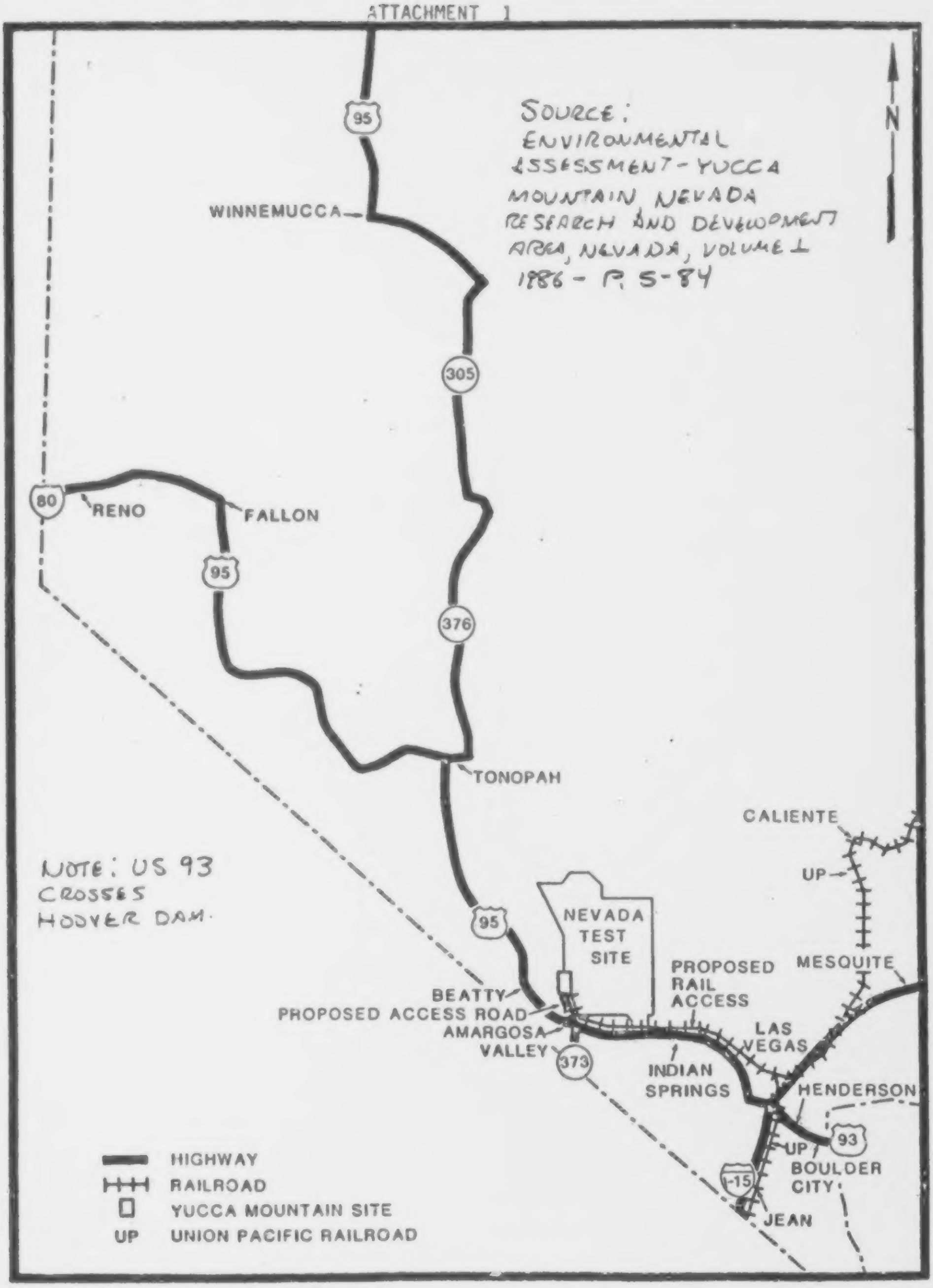
RECOMMENDATION. BECAUSE THE RESULTS OF THIS PROGRAM COULD ULTIMATELY IMPACT LOCAL COMMUNITIES, THEY SHOULD, THEREFORE, BE AN INTEGRAL ELEMENT IN THE DECISIONS BEING MADE WITH REGARD TO THE TRANSPORTATION ISSUES OF THIS PROGRAM. LOCAL COMMUNITIES CAN BE OF BENEFIT TO THE DOE IN SELECTING THE SAFEST ROUTES. IGNORING LOCAL COMMUNITIES MAY CAUSE FURTHER PROBLEMS IN IMPLEMENTING THE PROGRAM.

OTHER PROBLEMS THAT SHOULD BE ADDRESSED IN A TRANSPORTATION PROGRAM WOULD INCLUDE ENSURING THAT, IF RAILROADS ARE SELECTED AS THE TRANSPORT MODE, THE SAME CONDITIONS OF AVOIDING URBANIZED AREAS SHOULD BE APPLIED. CASKS, THAT IMPORTANT ELEMENT TO ENSURE THAT RELEASES WILL NOT OCCUR, SHOULD ALSO BE TESTED IN FULL SCALE MODEL AND UNDER CONDITIONS THAT REFLECT REALITY. THE POTENTIAL CONSEQUENCES DEMAND THAT THIS BE UNDERTAKEN.

TO CONCLUDE, I WANT TO THANK THE COMMITTEE FOR THE OPPORTUNITY TO PRESENT THE CONCERNS OF A LOCAL COMMUNITY THAT COULD BE SUBSTANTIALLY IMPACTED BY THE TRANSPORT OF NUCLEAR MATERIAL. I SHOULD REEMPHASIZE FOR THE RECORD THAT TRANSPORTATION OF NUCLEAR MATERIALS IS OF EXTREME IMPORTANCE TO THE CITIZENS AND ELECTED OFFICIALS OF CLARK COUNTY. I SHOULD ALSO NOTE THAT IN PART FOR TRANSPORTATION REASONS, THE COUNTY HAS COME OUT IN OPPOSITION TO THE PROJECT. IN ADDITION TO THE IMPORTANT HEALTH AND SAFETY CONCERNS, WE ARE, OF COURSE, CONCERNED THAT THE PROGRAM WILL AFFECT OUR MAJOR SOURCE OF INCOME WHICH IS TOURISM. WE WOULD CAUTION THE COMMITTEE AND DOE THAT SUCH DECISIONS ON TRANSPORTATION SHOULD NOT BE CONSIDERED LIGHTLY. THEY HAVE THE POTENTIAL TO GREATLY INFLUENCE THE LIVES AND LIVELIHOOD OF LOCAL COMMUNITIES.

WITH THAT I'LL CONCLUDE. I THANK YOU AGAIN AND AM AVAILABLE TO ANSWER ANY QUESTIONS.

ATTACHMENT 1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PROPOSED ACCESS ROAD
AMARGOSA VALLEY
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LAS VEGAS
INDIAN SPRINGS
HENDERSON
UP
93
BOULDER CITY
I-15
JEAN
HIGHWAY
RAILROAD
YUCCA MOUNTAIN SITE
UP UNION PACIFIC RAILROAD

SOURCE:
ENVIRONMENTAL
ASSESSMENT - YUCCA
MOUNTAIN NEVADA
RESEARCH AND DEVELOPMENT
AREA, NEVADA, VOLUME 1
1986 - P. 5-84

NOTE: US 93
CROSSES
HOOVER DAM.

ATTACHMENT 2

Table 5-35. Summary of waste routing scenarios used for regional impact analysis

Without monitored retrievable storage	Number of shipments			
	100% TRUCK			
	Scenario I		Scenario II	
Highway[a] Route	Spent fuel	HLW[b]	Spent fuel	HLW
I-15S[c]	36,583	9,800	38,574	12,050
I-15N	7,544	0	9,722	0
U.S. 93N	22,257	11,600	22,257	11,600
I-80E	807	0	0	0
U.S. 95S	1,991	2,250	0	0
S.R. 373N	1,371	0	0	0
TOTAL	70,553	23,650	70,553	23,650
	100% RAIL			
	Scenario I		Scenario II	
Rail route[d]	Spent fuel	HLW	Spent fuel	HLW
UPW	7,298	4,685	7,298	4,685
UPE	2,629	0	2,629	0
TOTAL	9,927	4,685	9,927	4,685

With monitored retreivable storage				
	100% TRUCK			
	Scenario I		Scenario II	
Highway[a] route	Spent fuel	HLW	Spent fuel	HLW
I-15S	0	9,800	1,991	12,050
I-15N	1,443	0	3,621	0
U.S. 93N	0	11,600	0	11,600
I-80E	807	0	0	0
U.S. 95S	1,991	2,250	0	0
S.R. 373N	1,371	0	0	0
TOTAL	5,612	23,650	5,612	23,650
	100% RAIL			
	Scenario I		Scenario II	
Rail route[d]	Spent Fuel	HLW	Spent Fuel	HLW
UPW 235	4,685	235	4,685	
UPE 535	0	535	0	
UPW-CSF	8,050	-	8,050	-
UPW-SW	2,793	-	2,793	-
TOTAL	11,613	4,685	11,613	4,685

[a] I = Interstate Highway; US = U.S. Highway; S.R. = State Route
[b] HLW = Defense and West Valley high-level waste
[c] Last letter in route designation denotes direction of travel.
[d] UP = Union Pacific; CSF = consolidated and overpacked spent fuel; SW = secondary waste.

SOURCE: SEE ATTACHMENT 1

HIGH-LEVEL NUCLEAR WASTE ISSUES

Monitored Retrievable Storage

THURSDAY, JUNE 18, 1987

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON NUCLEAR REGULATION,
Washington, DC.

The subcommittee met, pursuant to recess, at 9:30 a.m., in room 406, Dirksen Senate Office Building, Hon. John Breaux (chairman of the subcommittee) presiding.

Present: Senators Breaux, Simpson, Reid, and Symms.

OPENING STATEMENT OF HON. JOHN B. BREAUX, U.S. SENATOR FROM THE STATE OF LOUISIANA

Senator BREAUX. Good morning, the subcommittee will come to order.

I will begin by announcing that Senator Sasser from Tennessee was scheduled to be one of our witnesses, but he is not able to be with us this morning; he's attending a briefing from the Administration. We have his statement and will make it a part of the record.

[The statement of Senator Sasser follows:]

STATEMENT OF HON. JIM SASSER, U.S. SENATOR FROM THE STATE OF TENNESSEE

Mr. Chairman, I want to thank you for the opportunity to once more appear before this subcommittee. And I again come before the subcommittee with a simple message—we need to slow down the Department of Energy's mad rush to construct a de facto permanent repository under the guide of monitored retrievable storage facility. Indeed, I would go further, Mr. Chairman, to suggest that we need to step back and take a long, hard look at where we are in efforts to store—safely and efficiently—this Nation's nuclear waste.

Mr Chairman, in my last appearance before this subcommittee I made reference to a draft report on the MRS being prepared by the General Accounting Office. That report has now been released. And its conclusions are worth repeating at this time.

The GAO report finds, and I quote, "DOE's proposal does not identify the most effective configuration of the authorized waste management system for the Congress to use as a basis for comparison in deciding if the benefits of the proposed MRS facility are worth its added cost to the waste program. Further, DOE has not fully developed important MRS cost elements, such as payments for State and local taxes, aid to mitigate MRS' impacts."

Perhaps even more important is another passage from the GAO report. Again, I quote, "DOE's proposal does not analyze potential alternatives for improving the waste management system other than the MRS." The list of DOE's shortcomings in putting together the MRS proposal goes on. DOE did not analyze potential transportation improvements. DOE has not performed a comprehensive analysis of available options. DOE has not compared a waste disposal system with an MRS against a waste disposal system without an MRS. DOE has not determined whether utilities are willing or able to implement improvement to waste disposal.

The message of the GAO report is clear and convincing. Congress does not have sufficient information on the MRS to make an intelligent decision on whether or not to proceed with this facitliy. And yet, the DOE continues to push full steam ahead with the MRS proposal. Why are we being asked to move forward on a proposal which the General Accounting Office portrays as not very well thought-out? Why are we being asked to buy a pig-in-a-poke?

There are good reasons for pushing forward at this time. Indeed, all the evidence suggests we should take a much more deliberate approach. I would urge the members of this committee to take such an approach with any legislation authorizing the construction of an MRS.

Mr. Chairman, I would go further and urge the members of this committee to apply this "go slow" logic to all activity under the Nuclear Waste Policy Act. The GAO report has laid out a clear case for proceeding very carefully with the MRS. Basicallly, DOE has failed to do its job in justifying the MRS. I believe similiar problems apply to DOE's administration of the entire Nuclear Waste Policy Act.

The time may be ripe to impose a moratorium on all activity under the act for a limited period of time. We need to step back and think about where we're going with this Nuclear Waste Program. I would point out, Mr. Chairman, that this moratorium idea is gathering momentum in both the Senate and the House. I expect legislative action on this front in the very near future. I would urge the members of this committee to join in this effort.

We need to restore the public's faith in the Governments's ability to handle the very real national problem of safely disposing of nuclear waste. Moving forward with legislation authorizing an MRS is not the way to achieve that goal.

Senator **Breaux**. With that, we would like to welcome all of you here today. Today our subcommittee meets to receive testimony, at our fourth oversight hearing, on the progress of the Federal Government in managing the Nuclear Waste Policy Act of 1982. The primary focus of today's hearings will be the proposal of the Department of Energy for the construction of a Monitored Retrievable Storage facility, MRS. Pursuant to section 141 of the NWPA, Congress recognized that an MRS facility or facilities, utilized for the purpose of providing long-term storage for high-level nuclear waste and spent fuel, represented an "option for safe and reliable management of such wastes or spent fuel."

At the same time, Congress emphasized that any subsequent authorization of an MRS facility should not be pursued at the expense of a decision to house this Nation's nuclear waste in geologic repositories. Thus, Congress also stated that the disposal of such wastes in a repository developed under this act should proceed, regardless of any construction of a Monitored Retrievable Storage facility pursuant to this section.

The NWPA set forth a number of steps and procedures that were to be followed by the Department of Energy in the development of any MRS proposal that would be submitted to the Congress. The DOE, as evidenced by its March 30, 1987 submittal to the Congress—a submittal that has been referred to this committee—obviously believes that it has complied with those steps and those procedures. Others, notably the Governor and the legislature of the State of Tennessee, feel differently.

Obviously, the task before the subcommittee is to attempt to sort out these differing views and to determine whether or not it is in this Nation's best interests to pursue the course that has been recommended to us by the Department.

In our previous hearing, we have clearly established that the repository program, at least as it relates to the time frame set out in the NWPA, is in serious trouble. Schedules have slipped; deadlines have not been met, and affected States and Indian tribes have some serious—and I think, legitimate—concerns about their relationships with the Federal Government. However, I am mindful of the fact that the waste is out there; more is being generated, and it is incumbent upon the Congress through its oversight and legislative functions to provide some direction to the program. Whether or not a consensus can be developed as to how we can best write this vitally important program remains to be seen. This Member, for one, pledges that he will use his best efforts in this endeavor.

As I have stated before, we owe nothing less to the people of this Nation and to our environment.

Are there any other opening comments? Senator Simpson.

OPENING STATEMENT OF HON. ALAN K. SIMPSON, U.S. SENATOR FROM THE STATE OF WYOMING

Senator SIMPSON. Thank you, Mr. Chairman, and I commend you again for setting up today's hearing and the balanced array of witnesses who will testify.

As you say, this is our fourth hearing on the nuclear waste program. You have been busy with your work. We began in late April, heard testimony from Secretary Herrington and continued in early May with hearings on the issue of nuclear waste transportation and the geologic repository program. In each one of those hearings, Mr. Chairman, you have demonstrated your deep interest in this subject, as well as a very even-handed approach to these tough, emotion-filled issues, and they surely are.

This morning we will conclude our hearings on the nuclear waste program, with this issue of the construction of a Monitored Retrievable Storage facility. I think this proposal we have before us reflects some pretty long, hard work on the part of the Department of Energy and the dedicated perseverance of Ben Rusche. I was a little heavy on him the last time here, and had not intended to be so; he has to slog along in this rugged terrain while everybody lobs mortar shells at him from the hillsides, so he deserves more credit than we can give.

In response to the 1982 directive—and you and I were both in Congress at that time—we have these things to do. A report to submit, an MRS option, and this report which was the subject of extended litigation over whether it should be submitted at all satisfies that directive, in my view.

So we will hear our share of sharp disagreement over whether to proceed with the facility, but the time has come for us, based upon this report, to decide whether to proceed with an MRS. I look forward to working closely with you as always as we continue our efforts to fashion a solution to nuclear waste issues, and I welcome these witnesses today. I thank you for your efforts, Mr. Chairman.

Senator BREAUX. Thank you, Senator Simpson.

Mr. Reid, any comments?

OPENING STATEMENT OF HON. HARRY REID, U.S. SENATOR FROM THE STATE OF NEVADA

Senator REID. Thank you, Mr. Chairman.

To my friend from Wyoming, the only thing I would say about Ben Rusche is I think a few of the mortar shells have hit him.

Senator SIMPSON. They always do around here, Harry.

Senator REID. Mr. Chairman, I appreciate the opportunity to participate in today's oversight hearing concerning the Department of Energy's Monitored Retrievable Storage proposal. I look forward to hearing the statements of the scheduled witnesses, and you've got a very—as typically for you, and I think it's laudatory that you're such a hard worker—tough the schedule put together which is certainly complex and difficult and will take a lot of work, and I commend you for that, and the staff especially.

The MRS and the implications of this proposal that will be discussed today are efforts to carry out a safe, reasonable, and lawful program to dispose of high-level nuclear waste. Besides suspending the second repository and delaying the opening of the first repository by at least 5 years, DOE's mission plan amendment submitted to Congress in January calls for the opening of an MRS facility in 1998 so that DOE can meet its contractual obligation to begin taking spent fuel.

On June 9, the Department submitted the final mission plan to Congress, recommending the approval of an MRS at Clinch River, TN. DOE also recommends that the storage capacity be limited to 15,000 metric tons of spent fuel in order to neutralize fears that an MRS will ultimately become the final burial ground of the Nation's nuclear garbage.

I don't necessarily believe that a Monitored Retrievable Storage facility will be the panacea to our nuclear waste difficulties. In fact, the General Accounting Office released a report recently criticizing DOE's conclusions. GAO essentially charged that DOE did not fully consider the costs of an MRS, nor did the agency give proper thought to the costs and benefits of a waste disposal system without an MRS. I am sure this hearing will help to address some of these concerns.

I'd like to take this opportunity to commend my colleagues, the senior Senator from Nevada and my friend, the Senator from Washington, for this legislation. I think it will open areas that we would not have discussed without this legislation.

However, as I've said on several occasions, the Department of Energy's handling of the high-level waste program is suspect and controversial. What was originally crafted as a safe, sensitive, and comprehensive plan to address the management and disposal of spent nuclear fuel from defense and nuclear facilities has gone hopelessly astray, as indicated by the statement of the Chairman of the House Interior Committee yesterday. DOE's proposed MRS facility is subject to the same criticisms that have been leveled upon the agency's site selection decisions for first and second repository siting programs. It may be wise to restrict DOE's activities and give Congress a chance to determine the appropriate direction for this program.

Thank you, Mr. Chairman.

Senator BREAUX. Thank you, Senator.

I welcome our colleagues, and we'll hear first from Senator Chic Hecht in, I think, his second visit before the committee. We are pleased to have you again and look forward to your testimony.

STATEMENT OF HON. CHIC HECHT, U.S. SENATOR FROM THE STATE OF NEVADA

Senator HECHT. Thank you very much, Mr. Chairman. I appreciate the kind remarks from my colleague from Nevada. And Senator Simpson, I looked at you this morning and I looked at Ben Rusche, and Ben Rusche looks good but I see you've lost your hair, so he's doing pretty good under all this.

Senator SIMPSON. We'll have to talk about that later.

Senator HECHT. I am happy to be associated with my distinguished colleague, Senator Evans, because we have been working together on this issue, traveled together, and I think we're going to come up with a good solution.

Mr. Chairman, I appreciate the opportunity to appear again before your subcommittee on the subject of nuclear waste management. The last time I had the pleasure to be here the subcommittee was taking testimony on nuclear waste transportation, and today the subject is the Monitored Retrievable Storage facility.

I think there is definitely a role for a Monitored Retrievable Storage facility in the United States. Other nations have such facilities, but their concept of an MRS is a bit different from what is generally discussed in this country. The French and Swedes use MRS as a centralized long-term storage facility where waste sits until a more permanent repository concept can be developed, designed, and brought into operation.

As I understand it, the MRS being considered for America would be a very short-term storage facility, the major purpose of which would be to collect, consolidate and repackage waste and then to very soon thereafter ship it off to a permanent repository.

I think America needs to adopt the concept of long-term, aboveground, retrievable storage of spent nuclear fuel. There are two reasons for this. First, it makes little sense to move all this dangerous material thousands of miles and then stick it deep in the ground, when there is at least a reasonable chance that the country may someday want to recapture the unused energy that is still in the spent fuel. Second, by letting the spent fuel sit for a number of years before transporting it great distances, it gradually cools off and becomes safer, cheaper, and easier to handle, regardless of its ultimate destination.

I want to make it clear at this point that I am not calling for the State of Tennessee to be the site of a long-term storage type of MRS, nor am I advocating that an MRS be a substitute for a repository. I am well aware of Tennessee's reluctance about hosting an MRS, and I have not had an opportunity to study the merits of the specific MRS proposal for that State. Also, given the unpleasant experience my own State has had with the Energy Department's Nuclear Waste Program, I am more sensitive than most to Tennessee's predicament.

What I do hope to make very clear is that I think long-term, above-ground storage is necessary before consideration of any repository proposal. My bill, S. 1141, would require that waste be cooled for 50 years before being moved to a permanent repository. This is consistent with the plans of other nations. This requirement would have the effect of making a first repository unnecessary until about the year 2030, and would allow the annual shipments to be cut by a third since 50-year-old waste would accumulate slowly. Therefore, under my bill, less material of a less dangerous nature would be transported at a much later time.

A second repository would not be needed until about the year 2060. In other words, the taxpayers and the Nation would be given an extra 30 years or so to determine the best way to handle nuclear waste.

Mr. Chairman, let me say once again that I appreciate the opportunity to testify here before your subcommittee, and I commend you for holding these hearings today.

Thank you very much.

Senator **Breaux**. Thank you very much.

Senator Evans.

STATEMENT OF HON. DANIEL J. EVANS, U.S. SENATOR FROM THE STATE OF WASHINGTON

Senator **Evans**. Thank you very much, Mr. Chairman.

I joined a month and a half ago with a number of my colleagues, including the Chairman of the Committee on Energy and Natural Resources; the distinguished Senator from Wyoming, Senator Simpson; Senator Hecht, on my left, and others, to visit Sweden and France to see for ourselves what the difference is between two countries who are moving promptly, successfully in this field of handling their nuclear waste, and comparing it with our own situation which I don't think anyone can say is satisfactory.

I think we had our eyes opened by what we saw. I came back wondering just what was the difference, because here are two countries who have taken quite different courses, one from another; and in fact, two countries who have taken different courses than the United States. Sweden, by national referendum, has decided to end its dependence on nuclear energy at the time the current plants have run their full life. France, on the other hand, has determined to achieve its energy independence by a greater dependence on nuclear energy, with up to 75 percent of its electrical energy in future years to come from nuclear plants. So one would eliminate nuclear energy and one would pursue nuclear energy.

But both are successful in their handling of nuclear wastes, and we are not. Do they have better technology? I don't think so. In fact, the technology in most cases is technology which was developed by the United States and transferred to those two nations. Is it the engineering capabilities of those who reside in those two countries? I think not. As an engineer, I have great confidence in the engineering talent here in the United States.

I think there is only one reason, Mr. Chairman, why we have failed and they have succeeded, and that is simply the political problems which surround anything of this nature. There has not been the sensitivity to political problems in this Nation which are necessary for success. There was that concern and that awareness in each of the other countries.

There are abundant indications, Mr. Chairman, that our current program has been derailed—and derailed, I believe, for all time, unless there is some substantial change. There are so many lawsuits filed in the Ninth Circuit Court of Appeals that it will take years to untangle them. In last year's continuing resolution the Congress took action to significantly reduce the funding for the DOE's Nuclear Waste Program, and specifically prohibited exploratory drilling.

Representatives from the affected States have testified before this subcommittee and other Congressional committees on the lack of substantive cooperation they have received in dealing with the Department. Mr. Chairman, I, for one, do not believe that we should release the $79 million that the Department seeks during this fiscal year, and I will do everything I can to ensure that that does not happen. They don't deserve it. We are not prepared to move ahead at that speed; and frankly, I do not feel we are prepared to move ahead, even in fiscal year 1988, on the current course that the Department of Energy has chosen.

That brings us to alternatives. I would not lay all the responsibility at the doorstep of the Department of Energy; they have had to work with a Nuclear Waste Policy Act which we prepared and passed 5 years ago. I would not lay any blame at the footsteps of those who were the leaders in developing and passing the Nuclear Waste Policy Act of 5 years ago; at that time, that was the best we could do, both technically and politically. If we have been derailed since, it is that we did not accurately and totally follow the guidelines set forth by that act in 1982.

Mr. Chairman, in its proposal to Congress for an MRS at Oak Ridge, the Department identifies several of the benefits which an MRS facility does provide: increased efficiencies for transportation of the waste—certainly, the collection at an MRS and then transportation to a deep repository in a much safer condition. Packaging and consolidation of spent fuel rods at the MRS and interim storage, depending on the time you take, allows for decay of some highly radioactive but short-lived isotopes, as well as reduction of the thermal load, both of which make the task of long-term deep repository storage easier.

I join with the Department in proposing that an MRS should be an integral part of our waste system, but I would argue that it is precisely the advantages identified by the Department which should lead Congress to change the act and to expand the utilization of an MRS. If we have made an error, if there is a difference between our approach and that of Sweden and France and other nations, it is that they have clearly taken first steps first. We are attempting to take the last step first, and have found that it's a large step indeed, which we have been unable to take successfully.

If we begin with an MRS, or a series of MRS facilities, we give ourselves a chance to more safely and adequately store and prepare fuels for long-term repository. It gives us more time to do that task better.

Let me briefly describe the bill I have introduced.

First, S. 1266 mandates an 11-year pause in the permanent repository program. During this period of time we can reassess where we are; identify the most promising potential sites for a permanent repository; and I am convinced that when taken into consideration along with a long-term interims storage in an MRS or a series of MRS facilities, very likely a single deep repository would be all that is necessary, thus eliminating a fair share of the current problems we have with a two-tiered repository proposal.

Secondly, that the Secretary of Energy is authorized to develop and construct three MRS facilities in addition to the single MRS facility contemplated under existing law.

Let me be very quick to say that I don't know whether three additional ones—coupled with the single, making four—is the right number. Maybe three, maybe even as few as two. I believe that the right number is more than one, so that we can collect together the fuels from where they now exist without the maximum of transportation, prepare them, and hold them for extended periods of time.

In addition, Mr. Chairman, we can cut the costs of MRS facilities very substantially, at least in some cases, if we were to combine the MRS facility with the necessary preparation and interim storage of Defense wastes, and I would say particularly if Hanford were to be suggested as a site. We already have two-thirds of the Nation's Defense wastes now sitting at Hanford, unprepared, unpackaged, miserably stored. We desperately need the kind of stabilization that should be called for in Defense wastes, and the ultimate storage after that waste has been stabilized. It would be probably a very small additional or incremental cost to add facilities at a site like that for civilian waste coming from that region.

I might say, Mr. Chairman, that our biggest problem is we have yet to find anybody anywhere who will say okay. If this is a safe, best place for storage of nuclear wastes, so be it.

We had an editorial as a result of the bill I introduced in one of the distinguished Seattle newspapers which went even further than I have suggested in my bill; not only commending the bill and commending the direction we had taken, but suggesting even that Hanford might be a good location for one of those MRS facilities. That in itself may be a breakthrough; I'm not sure.

Thirdly, Mr. Chairman, States which are selected to host an MRS would receive annual payments of $100 million for the long-term use of the land and the environment once waste begins to be accepted. And I would say, Mr. Chairman, the Department of Energy had better start now including that concept in whatever waste storage program we have because I believe it not only is appropriate, but will be necessary in order to successfully produce a nuclear waste storage program.

And finally, Mr. Chairman, S. 1266 authorizes additional spending for research into alternatives to deep geologic storage. Such research hasn't been actively carried out by the Department of Energy since passage of the act, is not now being funded at all, and I believe it deserves to be.

Mr. Chairman, the fundamental problem facing us today is simply the fact that the nuclear waste program has lost its credibility—totally, absolutely, and without exception. It has lost its credibility, both scientific and political. At this point I have real doubts whether a repository will ever be successfully developed without fundamental changes in our nuclear waste policy and a reassessment of where we are and where we should go. The legislation I am proposing is not radically new, but utilizes concepts which have been discussed since the mid-1970's.

Mr. Chairman, some have suggested an alternative, to delay the entire program for a couple of years to have an outside commission take a look at it and to come back with some new ideas. I don't believe that's either necessary or desirable. Waste is being created each day. We know the technologies necessary. We have to find the political ways to allow that technology to proceed. I believe the concepts set forth in this bill do give us that opportunity, offering a chance for a responsible and rational program for dealing with this issue head on.

I fully realize the complexities, both technical and political, of this issue, but I believe that during this historic 100th Congress we must work together to set the nuclear waste program back on course.

S. 1266 provides a workable blueprint for reaching that goal, and I look forward to working with each of you on this subcommittee, hearing your comments and suggestions on the legislation, any ideas for improvement or modification, and the proposals which are necessary for repairing a program which has clearly broken down. It's an ambitious task we have set for ourselves, but one we cannot afford to ignore, nor one we can afford to delay.

Mr. Chairman, I'd be happy to answer whatever questions the committee may have.

Senator **Breaux**. I thank both of our colleagues for visiting with us and sharing your thoughts.

I guess one of the basic differences is that you both consider an MRS facility as a long-term storage facility as opposed to short-term.

Senator **Hecht**. Define long-term.

Senator **Breaux**. Well, 50 years would be——

Senator **Hecht**. How about 1,000 years?

Senator **Breaux**. Well, I guess I'm asking the question. It seems that the statute gives the authority to the Department to submit an MRS program which would be for long-term storage of high-level waste. The proposal we're getting from DOE, however, seems to be a very short-term proposal. And the feeling I'm getting from both of you is that you would recommend the MRS be for a longer-term period than what DOE is recommending.

Senator **Evans**. Well, Mr. Chairman, let me say that just physically or scientifically, the drop in short-term radioactivity which, by its very nature or definition, are the ones that create the most heat because they're decaying faster than the long-lived radioactive substances. We lose a great deal of that intense radioactivity and the heat which goes along with it in the very early years of storage. We had testimony from Mr. Rusche at an Energy and Natural Resources hearing several months ago that if, for instance, you were to store for 40 years and could design a deep repository which would take nothing younger than 40 years—I'll put it in those terms—that you could substantially reduce the costs because you could reduce the size, you could put materials closer together because they would be giving off less in the way of heat and short-term radioactivity than before. He testified that off the top of his head, at least, that might reduce the cost of a long-term repository by as much as $1 billion to $1.5 billion.

So I think that there are potential cost savings. I think there is potentially the opportunity to get by with one, maybe, rather than two or several long-term repositories. We would more quickly package and handle the nuclear waste in a vastly better condition than attempting to handle it at each of the more than 100 operating nuclear plants which we have, and it just seems to me that interim facility—somewhere in the 40- to 50-year range—makes all the sense in the world, and it has, most of all, the chance to succeed politically where nothing else is succeeding politically.

Senator **Hecht**. Mr. Chairman, following through on that.

When I asked you to define long-term, I introduced legislation for a cooling-off period of 50 years. I still consider that short-term on the basis of a 10,000 year repository for the eventual, final remains of the nuclear fuel.

But in the first 50 years—now, in France, different scientists that we spoke to on our trip, some said 42 years, some said 43, 44, 41; I put 50 years and we can argue one way or another about one or two years, but I think when you're talking about wanting it to be safe for 10,000 years, an extra 2 or 3 years doesn't make any difference. The main thing is, as Senator Evans mentioned, you have to hold it at least 40 or 42 years. But I favor 50 years, and it could go 60 years, and then the final repository would follow after that. So that's how I define it. Fifty years, to me, is still short-term.

Senator **Breaux**. Senator Simpson, any questions?

Senator **Simpson**. I do indeed recall that very important visit to Sweden and France. It was very much an eye-opener for all of us.

Let me share with you both that in our hearing in early June we were advised that extended storage of spent nuclear fuel beyond the 25-year range—average age of 25 years—of most fuel that would be placed in a repository will not result in any significant benefit in repository design or construction. In view of this, does it make sense to leave the spent fuel in an MRS for an extended period of time, particularly given the concerns that the host State will obviously have about the MRS becoming a de facto repository? That's my question.

Senator **Evans**. Well, Mr. Chairman, Senator Simpson, I of course was not here for that particular hearing. That does not—at least, from your description—sound very much like the testimony we heard at our own committee meeting in terms of extended storage. In fact, I believe that in the material we received from the trip there was a chart which shows very clearly the rapid descent in early years, and then the fading out in terms of the reduction in heat and radioactivity. It's my understanding, and I believe that I'm right, that the very nature and size and construction of a deep repository is dependent on the heat and the radioactivity associated with the heat that is there. You have to design it for a certain level and you have to separate the casks by a certain amount, depending on their heat and radioactivity when they're inserted. That's the maximum; you have to design for that. And there is still a significant reduction. It's slower as you get past 20 years or 25 or 30 or 40 years, but it's still significant. As I remember, the difference between 25 and 40 years is another halving of the heat and radioactivity which, I believe, does have or could have a significant impact. Maybe that's the kind of independent look we have to take.

If we're getting conflicting stories from the Department of Energy, maybe we need some external view on these subjects.

Senator SIMPSON. I gather that neither one of you would impose an across-the-board moratorium on the program, but want to move toward some type of storage program, obviously.

Just finally, in your views, does the need to address the problems with the repository program—and obviously, those are apparent—suggest, in turn, that we should redouble our efforts to authorize and construct an MRS?

Senator HECHT. I think his bill addresses that very well with four sites. And he mentioned that it might not be four; it might be three, and it might be five. But I think that's been addressed in Senator Evans' bill.

Senator EVANS. Senator Simpson, I would say that at this moment there is plenty of information—unfortunately, much of it conflicting; it's going to be hard to sort it out so everyone understands and believes that they're working from the same set of facts. I don't think we need to delay, or that it would be useful or desirable for us to simply delay the whole program for a couple of years or several years and do nothing while we sort of study where we are. It seems to me we can and ought to move ahead.

In the hearing we had in the Energy Committee, I put it in simple, good old American football terms, that I think we have been on a program where we're on about our 20-yard line. We may have the ball, or ought to have the ball, and we keep trying to throw touchdown passes. You know the odds of a touchdown pass from your own 20-yard line. I think it's time we started making first downs, taking things step by step, and that's the best—and perhaps the only—way to get to a touchdown. As a result, the one major fundamental policy change I would make is to advance the design and the construction and the installation of an MRS as a first down, and still proceed ahead, but at a slower pace, in figuring out our long-term geologic repository, which is the touchdown. We've gone at it backwards compared with those other two nations, and as far as I can tell any other nation, and as a result we have stumbled and stumbled badly.

Senator HECHT. May I add one thing, Senator? Also, I think we have got to come back and look at the area of reprocessing. Now, you know, three of us sitting here and three other colleagues were in this one room smaller than a basketball court in France where they had all the nuclear waste stored since 1950 to the present time; not 2,000 feet in granite, but 4 feet under concrete, and we walked all over the area. I think we have to come back and address the reprocessing.

Our reasons for not doing it is political. It's not scientific, and I think we have to address this before we come to grips with the deep-level repository, and I introduced legislation on that issue.

Senator SIMPSON. Mr. Chairman, I appreciate it.

I would add, Dan, that I think that in football terms we have to remember that we have about 14,000 metric tons of penalties laying out there, however.

And those are the amounts of spent fuel stored on-site at the nuclear facilities of America today, 107 reactors, and while we're playing the football game they're going to get bigger and get reracked. The environmentalists don't like what we're doing here; at one time they did. The transportation of that fuel is going to be almost impossible. No Governor with any sanity is going to get up and make the reelection address that he's anxious now to accept it, so that's reality, too. That is a very real part of this thing.

Senator EVANS. I thoroughly agree with you, and the Department of Energy's program is so offside, collecting more penalties—they're so guilty of holding when it comes to their relationships with States and local communities that they're accumulating more penalties. We'll be behind our own goal line if we keep going in the direction that we're going.

I can think of nothing, Mr. Chairman, that would be worse than continuing along the current direction that the Department wants to go. Now, they are guided by the law as it now exists, but the ludicrous idea that we are going to spend a billion dollars each on the characterization of three separate deep repository sites, with the small chance we have of ever successfully getting something sited—except over the dead bodies of many people in these States—makes absolutely no sense whatsoever when I believe there are alternatives which might well, if sensitively handled, produce some political acceptance along with some scientific first downs.

Senator SIMPSON. We need more alert referees.

Senator BREAUX. And if we don't hurry up, we'll be in an overtime situation, too.

With that we'll excuse our colleagues. We thank them very much for their very helpful presentations and the legislation.

We'd like to welcome up our first panel, consisting of Mr. Ben Rusche with the Department of Energy; Mr. Keith Fultz, who is Associate Director, Resources, Community and Economic Development with the GAO; and Mr. Hugh Thompson, Director, Office of Nuclear Materials Safety and Safeguards from the NRC.

Ben, we welcome you back to the committee. We have your testimony; I've already underlined it and highlighted it and everything else. If you could just summarize it for the record we could proceed to questions.

STATEMENT OF BEN C. RUSCHE, DIRECTOR, OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT, DEPARTMENT OF ENERGY

Mr. RUSCHE. Thank you, Mr. Chairman. I am pleased to have the opportunity to visit with you again. This is getting to be a habit, and I hope it's one that will help us solve some of the difficult athletic issues that we were discussing a few moments ago.

I've always been an athletic supporter——

[Laughter.] And in fact, if you recall, I had the opportunity of playing football for a number of years; in fact, I coached for a year or two, and the last thing we need is more referees.

It is true, though, that the testimony and the dialogue that the distinguished Senators from Washington and Nevada offered provide an awful lot of insight into the subject that we're discussing today; not only MRS, but the whole waste program, and I'm very grateful both for their straightforwardness and expression, and for my having the opportunity to being a party to hearing it.

Mr. Chairman, the formal presentation of our proposal to Congress in March, which we believe is fully responsive to section 141 of the NWPA and meets our commitment to study a "no MRS" case, leads us to conclude that an MRS is needed in the United States' integrated waste management system for the following reasons.

We believe it improves the waste system deployment and development because it gets us into a two-step implementation program. It permits earlier and better planning and logistics for transportation and waste acceptance. It simplifies repository surface facilities and activities. It begins system integration steps earlier. It allows early establishment of parameters for the whole system.

Second, it permits earlier waste acceptance, perhaps avoiding up to 10,000 metric tons of new at-reactor storage capacity.

All of my comments and our proposal are offered in light of the existing Act, a subject which I think would be worth some further discussion.

Third, it improves the system reliability and flexibility by adding some additional storage capacity and buffering ability. It improves repository operations by yielding far fewer shipments to the repository by improving the shipping and handling activity. It improves transportation by reducing shipment miles by 20 percent to as much as 60 percent, depending on the location of the final repository, and certainly reduces the number of vehicles on the road. And it has institutional benefits in providing us the occasion to develop State relations activities and engaging successfully in licensing experiences with both the Nuclear Regulatory Commission and the States.

It is generally agreed by those who have reviewed our work that there are no safety problems especially associated with MRS; not to say that it is not an activity that requires great care, but that it uses available technology and does not present new technological challenges in that sense.

I reiterate our view that MRS is not a substitute for deep geologic disposal. Rather, we believe it should be an element in the integrated system. We have requested, in our proposal, that Congress assure this in part by limiting the storage to 15,000 metric tons and linking the start of such operations to receipt of a construction authorization for the repository. This is contained in our proposal in considerable detail and grows out of one of the comments that our previous witnesses have spoken about, namely, our attempt to be responsive to State concerns. The State of Tennessee did, in writing to us—and perhaps will again today in its testimony — reiterate its view that such a linkage is important in its consideration of accepting such an activity.

I would note also that operations that are planned for an MRS are not practical on the same scale at reactors. We believe—and I believe it is true, and those who have visited other countries likewise agree—that reactors need to focus their attention on operations, not fuel management, in particular engaging in large-scale consolidation activities. We've heard testimony from a number of people and have studies in our proposal that suggest that conducting these operations at 100 sites, or multiple sites around the country, certainly does not provide the kind of quality and uniformity with the assurance that could be provided at an MRS.

In considering the MRS, DOE evaluated three systems. We looked at the repository system; the disposal system as a repository only, with its associated transportation activity. We looked at an integral MRS—that is, the integrated system that I have referred to. And finally, we looked at a waste disposal system that included an MRS as a backup facility. This is somewhat the suggestion that was made in the Act.

In the end, there are only three choices. We have to accomplish the activities that are considered for the MRS either at the reactor site, at the MRS, or at the repository. We believe a major objective should be to lessen functions at the reactors and at the repository, and we believe that the MRS provides that opportunity.

We considered the effect on utilities and have reactor-by-reactor data available. There is no way to be precise in advance, but we believe that in light of the ranges of activities, we have covered the parameters that we need to.

The GAO has provided some information. We have provided our full comments on the GAO study, included in the report, for which we are grateful, and we would be prepared to discuss any of the questions that arise from that publication in the questions and answers.

We have additional studies going on all the time to try to refine our understanding of both the costs and the need for an MRS, and on that basis, to try to improve our design and consideration of such a system, perhaps making it as close to optimum as we can.

Cost-effectiveness is an important objective in this activity. It's extremely expensive. We in this country are proposing to spend billions of dollars in disposing of high-level waste and spent fuel. It is expensive in other countries as well, and the visits that many of your colleagues and others have recently had provides very specific information. We have had additional discussions; as I promised you at one of our hearings, when that information becomes complete, we will do our best to make it available to you. But already it is clear that there is much to be learned by sharing that cost information.

It is true that an MRS in the proposal that we have before you would probably increase the net total life cycle costs in the neighborhood of $1.5 billion to $1.6 billion. That's in a system whose estimates range from about $30 billion to $35 billion in constant 1985–1986 dollars.

In our cost estimates we did not provide specific estimates for a number of items which are explicitly culled out. I am prepared today, sir, at your request to offer my current view of what those might be, and perhaps that would provide some additional information that would be useful in your consideration.

We have worked extensively with the State of Tennessee, which was our choice for the three sites considered, as required by the law. We took steps, we thought, in advance of or beyond those required by law, and we provided a $1.4 million grant to the State. The State, in turn, provided grants to the three communities that were in the vicinity of the sites that we looked at. Over a period of almost a year we had 87 workshops, briefings and public meetings, 20 of these with State officials, 15 with local officials, and in fact provided the wherewithal for three travel briefings by State officials to visit nuclear activities in Idaho, Nevada, and New Mexico.

We have had extensive written dialogue, and I take note again of the excellent work done by the Oak Ridge Task Force. Many useful suggestions were offered, and we believe we have considered those and included them to the best of our ability in the proposal.

At the bottom line, the State has told us that their objection to the location of the MRS in Tennessee is for business and political reasons, not for safety and environmental reasons. That correspondence is attached to our proposal. You will hear today from NRC, whose comments are attached to our proposal. We likewise had comments from EPA, as required by the law, and those comments indeed say that the MRS does not present especially challenging environmental problems.

Mr. Chairman, in addition to the comments I've made, you asked us to be prepared to respond to or to offer comment on the legislative proposals, in particular three bills, and I am prepared to speak to those if you care to have that information at some time during the discussion.

In conclusion, I think we need an MRS. I'm pleased with the testimony provided by the two Senators who preceded us; and although we may have slight differences of view about just how to do it, we in the Department are constrained by the Act. We are charged with carrying out the provisions of the Act. If the Congress determines that some of the provisions in the Act need to be changed, then the nature of the program perhaps should be changed. But I believe that the recognition by the two Senators before us, that an MRS in some form and some manner would be a very valuable addition to an element in the United States' waste disposal system is one that we share fully. We are firmly convinced that an MRS is essential; and although the differences suggested in other countries are noteworthy, they too have concluded that such an MRS in some form is useful.

In the end, it is the political problem that was outlined by Senator Evans that the Congress, I believe, is addressing to a much greater degree than the technical problem. Congress must choose, and we will do our best to carry out the will of Congress.

Thank you, Mr. Chairman.

Senator **BREAUX**. Thank you, Mr. Rusche.

Mr. Fultz?

STATEMENT OF KEITH O. FULTZ, ASSOCIATE DIRECTOR, RESOURCES, COMMUNITY, AND ECONOMIC DEVELOPMENT DIVISION, GENERAL ACCOUNTING OFFICE

Mr. **FULTZ**. Thank you, sir. As requested, I will summarize our statement, but I would like our entire statement made a part of the record.

Senator **BREAUX**. It will be.

Mr. **FULTZ**. Thank you.

I am pleased to discuss DOE's proposal to construct and operate a Monitored Retrievable Storage facility. The GAO was asked by two House committees to assess whether the proposal provides Congress with enough information to make an informed decision on the need for this facility. We were not asked to determine whether it is justified.

In our opinion, the proposal does not provide all the information Congress needs before making a decision on the facility. Our report discusses three key points.

First, DOE's concept of Monitored Retrievable Storage differs from that described in the Nuclear Waste Policy Act.

Second, its proposal does not fully explore alternatives for improving the current waste system.

And last, it does not fully estimate MRS costs.

I would now like to briefly discuss these issues.

The act authorized DOE to dispose of spent fuel in a geologic repository. It also required DOE to study the need for and feasibility of long-term storage in a Monitored Retrievable Storage facility. However, DOE proposes that the facility be constructed and used for the receipt, preparation, packaging and temporary storage of spent fuel. The Congress, in evaluating this proposal, needs to recognize that it differs from the long-term storage concept contained in the act.

DOE's proposal identifies alternatives for expanding spent fuel storage at nuclear plants and improving waste transportation. It concluded that none of them, either alone or in combination, could provide the benefits achievable with an MRS. In our judgment, however, DOE's conclusion is premature because its assessment of individual alternatives and combinations of them was somewhat limited.

For example, the proposal does not contain utilities' views on the need for the facility or whether they would be willing or able to implement other storage alternatives. Likewise, while the proposal describes advantages and disadvantages of potential transportation improvements, it does not compare their benefits and costs with the potential benefits and costs of the MRS.

Finally, the DOE did not determine the net effect that various combinations of transportation, reactor storage, and repository improvement alternatives might have on the current waste system, nor did it determine the most effective combination of improvements.

We believe the Congress needs to be aware of the consequences of not approving, as well as approving, the MRS facility. Therefore we recommended that DOE identify the best configuration of the current waste system and present Congress with information on the benefits and costs of this system along with those of the MRS.

Now we would like to discuss DOE's cost estimates.

DOE estimates that an MRS facility would add about $1.5 billion to the waste disposal program, as Mr. Rusche just mentioned. This proposal, however, does not include costs of impact aid to affected localities, grants equal to taxes, and several other cost elements. And as we heard this morning from the other Senators, this could be substantial.

In December 1985, an independent DOE cost estimating staff concluded that DOE may have underestimated MRS operating costs by as much as 10 to 15 percent, and that the omitted construction and operating costs could be of what it called "substantial magnitude."

We recommended that DOE provide reasonable estimates of all MRS-related costs. DOE did not agree because it considered most of the costs to be small, some unclear at this time, and still others subject to negotiation with State and local governments and/or Congressional determination. Without complete cost estimates, however, it would be difficult in our opinion for Congress to determine whether the MRS is worth the price that utilities are being asked to pay.

In closing, Mr. Chairman, I would like to emphasize the key messages of our report.

Congress authorized DOE to develop a specific waste disposal system and directed it to prepare a proposal for long-term storage of spent fuel in a Monitored Retrievable Storage facility. However, DOE has proposed building and operating a facility for waste handling and temporary storage.

Although DOE believes that the benefits of the proposed facility are worth its added costs, Congress must make the final decision.

As I've just discussed, in our opinion the DOE proposal does not provide sufficient information to compare the proposed waste system with the best configuration of the current system.

That concludes a summary of my statement. I'd be pleased to respond to any questions.

Senator BREAUX. Thank you, Mr. Fultz.

Mr. Thompson.

STATEMENT OF HUGH L. THOMPSON, JR., DIRECTOR, OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS, NUCLEAR REGULATORY COMMISSION

Mr. THOMPSON. Thank you, Mr. Chairman. I'd like to assure you that as long as Mr. Rusche has played football I've been a referee.

I'm pleased to have the opportunity to present testimony to you this morning on the DOE's proposal for the Monitored Retrievable Storage. Your letter of invitation asked for NRC comments on three legislative proposals. The Commission is currently reviewing these proposals, and our comments will be provided for the record. With your permission I'd like to submit the entire statement for the record and summarize my remarks.

Senator BREAUX. Without objection.

Mr. THOMPSON. First I would like to briefly highlight the principal observations based on our review of the DOE proposals.

Two of the three sites selected for consideration by the Department for the MRS have been evaluated and accepted by the Commission earlier for the licensing of nuclear power plants.

Secondly, the facility design appears to be licensable under applicable NRC regulation.

Thirdly, the spent fuel rod consolidation techniques contemplated for the MRS must be adequately demonstrated. This comment addresses our concern to minimize the potential for unnecessary radiological exposure to maintenance personnel if the equipment and the techniques planned by DOE turn out not to be reliable.

Then as a matter of procedure, it was recommended that DOE seek clarification of NEPA requirements in legislation authorizing the MRS. I'll come back to that point in just a moment.

These comments were made from the perspective of our regulatory responsibility, and particularly from that of protecting public health and safety and the environment. In addition, we concluded that the matter of need was primarily a business decision within the overall DOE waste management program. Nevertheless, we believe there are benefits, both operational and regulatory, to be gained by providing an MRS as part of an integrated high-level waste disposal system as proposed by DOE. These benefits are worthy of consideration even though an MRS is not essential for the safe storage of spent fuel.

Examples of operational benefits include the flexibility for DOE's waste management system by decoupling the repository from the reactor and the reactor site; simplification of surface facility operations at the repository; a firmer base for utilities to plan for their fuel storage requirements, and early planning and focus for the DOE transportation system.

In addition to the operational benefits there are some regulatory benefits with respect to our resource expenditures. The MRS as proposed would permit fewer designs for handling and storage to be reviewed, licensed and constructed at reactor sites; fewer numbers of reactor facilities engaged in spent fuel rod consolidation; fewer surveillance demands and more focused NRC inspections, and a greater degree of quality assurance with this simplicity.

The staff also examined alternatives to the MRS considered by DOE, and they seemed to have neither the operational nor regulatory advantages of the MRS as currently contemplated.

Should the MRS not be authorized, all storage and packaging operations would have to be carried out at reactor sites and the repository. While it is technically feasible to safely store all fuel at reactor sites until the repository is ready under the current schedule, the regulatory and operational benefits identified would not be realized.

In our comments to the Department we noted a possible conflict with respect to our responsibilities between the National Environmental Policy Act and the Nuclear Waste Policy Act. If the MRS is authorized by Congress, the Nuclear Waste Policy Act specifies that the requirements of NEPA will apply except that any environmental impact statement prepared shall not be required to consider the need for the facility. However, the Nuclear Waste Policy Act is silent concerning NEPA requirements for evaluation of alternative sites and cost-benefit analyses.

If Congress approves the MRS at a particular site, the need for and usefulness of an NRC review of alternative sites is not evident.

NRC would like for Congress to clarify its intent in the legislation or in a committee report if Monitored Retrievable Storage is authorized. The resolution of these matters could affect the Commission's review schedule.

If authorized by Congress, DOE's schedule projects 30 months for completion of the MRS design and preparation of the license application for submission to NRC. The DOE schedule projects 30 months for the licensing process, including time for public hearing. Except for the uncertainties associated with the alternative site review that I just mentioned, and the hearing process, we believe that this schedule is achievable.

As a final note, we ask that Congress carefully consider the provision contained in the MRS proposal that would prohibit operation of the MRS until the Commission has issued the construction authorization for the first permanent repository. DOE has clearly indicated that the reason for this linkage is to provide added assurance to State and local governments that the MRS will not become a de facto disposal site. The Commission supports the DOE position that the MRS should not be a substitute for a high-level waste repository; however, NRC's obligation in reviewing the license application for the repository and issuing the construction authorization is to protect the public health and safety, and will not include considerations related to the schedule for operation of the MRS.

Nevertheless, the proposed linkage between the repository construction authorization and MRS operations, both projected for 1998 under DOE's revised schedule, could lead to at least an appearance of undesirable and unnecessary pressure to issue the repository construction authorization. For this reason, and because there is no technical basis for the linkage, the NRC opposes this provision.

In addition it is my personal view, Mr. Chairman, that this provision creates the undesirable potential for having a fully constructed MRS that cannot be utilized, or even relied upon, by the utilities for planning. This could result in the need for the utilities to construct duplicate storage facilities and capacities at the individual sites. If this duplicative approach is needed, it would likely significantly reduce the operational and regulatory benefits that I have just identified.

This concludes my summary of my testimony. I would be pleased to respond to any questions you may ask.

Senator BREAUX. Thank you all very much for your presentations.

Mr. Rusche, let's try and address some of the concerns that GAO raised in their study. I referred to one of the questions to the two Senators, but GAO says that DOE's proposal "recommends the MRS for handling and temporary storage rather than for the long-term storage program as outlined in the act." I agree with that; I'm not sure how we addressed that, but it seems that what you're recommending in the study is temporary storage as opposed to long-term storage. The act talks in terms of long-term storage. Can you elaborate on that?

Mr. RUSCHE. Mr. Chairman, I'd be pleased to. If I may be permitted to be a little bit retrospective, three and a half years ago almost, when I was confirmed, I addressed this very issue with the confirming committee and indicated it was my view at that time that the view that at least some might read into the language in the Act, which I don't read quite as sharply in section 141 as some would read—namely, that MRS should be considered only as an alternative for a long-term storage facility—I thought at that time, and we have spent a considerable amount of time looking at alternatives, that an MRS ought to be part of an integrated system, would be useful for purposes other than just as a backup or alternative. Our studies have continued to reflect that view; not because I thought it 3½ years ago, but because the studies have revealed the benefits that we have described.

If you look at section 141(a)(1), under "findings," it is noted that long-term storage of waste at an MRS is an option. We are instructed in 141(b)(1), I believe it is, that our proposal is to look at the need and feasibility, and that's precisely what we did. So I don't think there's a conflict between the sort of mode of operation or the characteristic of the MRS in what we proposed and what the Act asked us to do. We looked at the MRS as a long-term storage option; we just did not conclude that was the most appropriate use.

Senator **Breaux**. How long do you envision the plan for the MRS to be a functioning facility, then? Is there a time frame that you're looking at?

Mr. **Rusche**. Our best estimate is, given the kinds of schedules that are in the Mission Plan, it would be about 45 years. It would be about 10 years between authorization and operation, about 26 years in operation, and another 5 years or so in shot-down and decommissioning. So it would be in operation and functioning for about 40 to 45 years.

Senator **Breaux**. From a technological standpoint and engineering standpoint and what have you, wouldn't that facility have a much longer life than that as far as being able to continue to receive it?

Mr. **Rusche**. It could operate indefinitely. And that period is based on the fact that we expect the fuel generating system—that is, operating reactors—to cease generating fuel in that time period. We are able to predict with very little confidence what that time period would be, but the basis of our evaluation was that that time period would obtain. Clearly, the facility could operate for an indefinite period.

Senator **Breaux**. Another GAO point that is made by Mr. Fultz this morning is that the proposal from your Department does not fully explore alternatives for current waste management systems which do not include an MRS facility for comparison. What's your comments on that?

Mr. **Rusche**. Well, I believe Mr. Fultz' statement was that perhaps we didn't consider them adequately. I don't believe there was a statement that we did not consider them at all.

Senator **Breaux**. He says, "does not fully explore."

Mr. **Rusche**. "Does not fully explore."

We did explore in considerable detail and depth, and we believe we did fully explore, but perhaps my judgment is not fully objective, and I would direct your attention to portions of Chapter 2 and to Appendices A, B, C, D, E and F, I believe, which in part—and particularly Appendix A and Appendix B, which are almost exclusively aimed at comparing the "no MRS" versus MRS system.

There's no question; Mr. Fultz is correct that we do not have the level of detail of data for some of the alternatives that we considered as we do for the MRS which we've made the proposal on. On the other hand, it appeared to us that the kinds of variations that might exist between these systems were of such a nature that it was fairly straightforward from available data to make judgments—in some cases quantitative, in other cases qualitative—and that's precisely what we did.

I believe a study of those documents would give an interested person a fairly good picture of what the alternatives are.

Senator **Breaux**. I think a lot of Members are recommending that we just consider expanding the storage capacity on-site for the facilities that are now storing the waste in water pools. Do you feel that we have enough information to be able to reject that argument, or to consider it with the information that we have?

Mr. **Rusche**. Well, I think we do. Perhaps the information contained in the proposal per se may not provide the answer to every question, but we've provided the answers we thought were pertinent. For example, the unit cost of storage on-site is clearly higher than it is at the MRS. If dry storage were used on-site, the costs could approximate the storage costs at MRS.

Senator **Breaux**. How about transportation costs?

Mr. **Rusche**. Transportation costs, I think, are a relatively nondiscriminating factor in the discussion because the transportation costs have so many variants, no matter whether you have the MRS or not. We have to transport the fuel from the reactor to its final receiving site. If the MRS is involved, in some cases we project a considerable savings in cask miles and in dollars. But on the other hand, there could be arrangements with an MRS in which the costs of transportation would go up.

So we concluded that the cost of transportation, for which we have provided estimates, could add as much as $50 million to the cost of the system, or it could save as much as $200 million in the cost of the system. And that range of estimates covers such a wide range that until you're very specific, you can't tell.

Now, when operating reactors begin to look at accomplishing the other functions that we envision for the MRS, such as rod consolidation, final packaging for the repository in sealed, clean containers, I think we find quite a sharp value in doing this in a dedicated facility. Mr. Thompson has mentioned several of the regulatory advantages. We find technological advantages, and in particular there is the operational consideration of whether you want to have those kinds of operations going on concurrent with reactor operations. I think as a purely conceptual approach, it's much better for the reactors to confine their attention to operating the reactors. Our friends in Sweden have come to that same conclusion. In fact, they provide a nearby storage facility called "CLAB," an MRS, if you will, in water primarily for the purpose of minimizing the amount of fuel stored at the reactors so that the reactor operators have minimum fuel handling and storage functions to carry out.

So when we look at all these factors together, I think that in our view it's a clear-cut choice that MRS is both cost-effective and technologically more attractive, and certainly provides licensing advantages.

Senator **Breaux**. Why, in your proposal, do you preclude any waste being accepted by the MRS facility until a construction authorization for the first permanent repository is received? What's the purpose of that?

Mr. **Rusche**. We came to this conclusion as a result of our intensive interaction with the proposed host sites in Tennessee. There was a clearcut apprehension as to whether or not this proposal was a subtle attempt to turn away from deep geologic permanent disposal, and that the MRS was really a permanent repository or permanent storage site forever, or at least for a long, indefinite period, in disguise.

We sought ways to try to provide confidence of that fact. I had many Members of the House of Representatives come to me, both on the record in hearings and privately, and raise the same apprehension. And we concluded that for an operational system as we envisioned, that storage of about 15,000 tons, about five years of waste generation, and not allowing the MRS to start operating until we had fairly high confidence that there would be an acceptable site for a repository, were the two steps that provided the greatest confidence. Some have said, "Well, why doesn't Congress just say that the MRS is an interim storage facility and that a repository will come in the bye-and-bye?" And the response has been that people were not quite so confident that they could count on that kind of conclusion. Obviously Congress can make its choice, now or in the future, but this kind of step appeared to us and to the people we were talking with, particularly in Tennessee, and other Members of Congress, an appropriate set of steps to provide that confidence that MRS was not a substitute for a repository.

Senator **Breaux**. Senator Symms, any questions?

Senator **Symms**. Thank you very much, Mr. Chairman, and I thank all of you for your testimony.

I was wondering, Mr. Rusche, if you could just expand a little bit on the design for canisters in which the spent fuel would be stored and for the casks in which they would be shipped. Everyone seems to have some fear about that, and I wondered if you could expand on that.

Mr. **Rusche**. There are two or three classes of operations that involve placing fuel elements in containers and moving them from place to place. Perhaps the easiest way to start is to imagine that the final container which would be emplaced in a repository would be a sealed container of a material that was selected to provide the best properties for that particular storage medium. For example you need a different kind of metal for a salt site than you do for a tuff site, such as is in Nevada, and much of the work that's going on is to select that material.

The desire would be to have a clean, sealed container so that the repository is a relatively clean operation; that is, did not have surface contamination to deal with. That can occur in any of three places. You can take the fuel that exists in the fuel pool; you can put it in such a container and seal it in the fuel pool if you have the equipment, and it does indeed take special equipment and circumstances—it has to be in a position so you can get it dry; or you can do it at an intermediate facility which we call the MRS, where we are equipped to do this on a large scale, and, in such an environment, consolidate the fuel so that there is more fuel per container depending on its age, a subject which we've discussed at some length already. We take those containers and select casks to ship these containers in which are particularly suited for the age of fuel and the kind of container that we've got.

You may be aware that just in the last couple of weeks that from the Idaho Operations Office, who are doing work for us, we have announced the selection of contractors with whom we are negotiating contracts for advanced cask design. Those casks are being designed to cover a range of operational parameters that would accommodate all of the packages that we're talking about.

Senator SYMMS. What are the dangers that are implicit? For example, can this fuel explode or melt into the water or turn into some kind of gas and cause problems?

Mr. RUSCHE. The fuel is, perhaps, the most benign form in which we can ship the material. It is so because we have had it in a reactor for some numbers of years in which it has been generating heat and has, in effect, survived that process. As it begins to cool off as a result of radioactive decay, the integrity of the fuel becomes less and less a question; that is, it becomes more and more resistant to anything happening to it.

We put it in a container that is then sealed. We put it in a cash which would have been certified by the NRC, and its certification will have depended upon a series of tests that are test-aimed at finding the real strength and integrity of that cask. It is inappropriate from a scientific standpoint to say that there is no risk associated with any of these steps, but I would say that in comparison with the risks where there are energetic systems with high-stored energy or high temperatures, that both the packaging and handling and shipping of fuel is one of the lowest-risk activities in the whole nuclear cycle. The integrity of the casks depends on the design of the casks and the assurance that comes from their being certified and regulated by the NRC. We've never had a cask that has failed and released radioactivity, to the best of my knowledge. There have been thousands of shipments made already.

Senator SYMMS. I'm sure you are aware that Senators Johnston and McClure have introduced legislation to have a monetary benefit to a State that would take the storage. Has the Department given this consideration? Is there any monetary benefit that you would be prepared to make to a city and a State that would accept one?

Mr. RUSCHE. Well, under the act now we have certain authorities and we are trying to work to that end, but I think Senator Johnston's bill—S. 839, if I'm not mistaken—proposes certain additional benefits, and we think that the legislation deserves very serious consideration. Whether those are the right numbers or not I think is a matter for Congress to choose. But Senator Evans said a few moments ago that he would have me even go ahead in anticipation of the law in including cost estimates for payment of such funds to a receiving political entity. I think it is appropriate that we need Congressional authority to do that, but in our Mission Plan amendment that came up in the last couple weeks, we did in the final section on State relations and consultation and cooperation, suggest to the Congress that such consideration is timely. We would indeed be prepared to support legislation of that sort. I think there might be some refinement that's worthwhile, but I think it's good legislation.

Senator SYMMS. Just to restate it for my edification, if I heard you correctly when Senator Breaux asked you about technologically how long an MRS is good for, in other words it could last anywhere from 50 years to 500 years—or what?

Mr. RUSCHE. As long as you're willing to spend money and maintain it. It's just like any industrial facility. Occasionally the mortar might dry out and you have to replace a brick, or a piece of equipment might fail and you have to replace it, but it's not a facility which has a discrete lifetime because of some generic property of the facility itself.

Senator SYMMS. Thank you very much.

Thank you, Mr. Chairman.

Senator BREAUX. Senator Reid, any questions?

Senator REID. Thank you, Mr. Chairman.

I'd like to follow up just a little bit on the question that Senator Symms asked.

You say the casks have always proven to be fail-safe. What would happen if one of the casks did break? What would the stuff inside do to people?

Mr. RUSCHE. The "stuff inside," which is either spent fuel or vitrified material from the Defense waste system, is benign material in terms of its chemical reaction or its stored energy. That means that if every barrier were broken, you have a radiation source that is now exposed, and a person that came close to it would receive gamma radiation exposure.

There is some, but very minor, potential for distribution of the material either by water or air. It's not zero, but it's very small. The real potential is exposing the radiation—that is, providing personnel access—to the irradiated material that is bearing the radiation. That's no different from coming in contact with a cobalt source that's used industrially, or coming in contact with an x-ray machine that's used in the doctor's office, with the exception of the fact that the intensity is proportionate to the amount of material that is exposed.

Senator REID. The things you mentioned are also dangerous, cobalt, x-rays not used properly; is that right?

Mr. RUSCHE. If not used properly, just like aspirin is dangerous if not used properly.

Senator REID. You're not comparing the stuff in these casks to aspirin, are you?

Mr. RUSCHE. In terms of risk to the human body, they are quite comparable.

Senator REID. What you're saying is that the stuff stored in these casks is comparable to aspirin?

Mr. RUSCHE. If you take a bottle of aspirin in you're pocket, as you probably have done from time to time, you're carrying a lethal dose of aspirin with you.

Senator REID. We started this conversation indicating that the casks would break, and you are indicating that the material inside one of those casks is like aspirin?

Mr. RUSCHE. In some sense it's not as bad as aspirin because, one, you can see it; and two, you can move away from it. If you swallow the aspirin you've essentially taken an irrevocable course that's pretty dangerous.

Senator REID. So this is getting better all the time. Now it's not as bad as aspirin; it's better than aspirin?

Mr. RUSCHE. No, the choice is not "either/or," sir. The question is what you do with it. If you walk up and sit down on it, you're going to get burned. And if you sit down long enough on it or stay close to it long enough, you're going to receive a dose of radiation that could be lethal. But that's not something that's going to occur in a couple of minutes.

Senator REID. I would agree that it gives us all a headache.

Mr. RUSCHE. Well, it could do more than that if you stay very long.

Mr. THOMPSON. Excuse me, Senator Reid. If I might I'd like to respond to one aspect that you have there, if it would be helpful.

When we look at the casks themselves we kind of look at three or four different aspects.

First is the criticality; that is, the nuclear material, and could you actually have a nuclear chain reaction.

We look at the damage that might occur in the radiation shielding; that is, we look at its ability to protect the public from direct radiation.

The third thing we look at is its ability to maintain its integrity. In our licensing we have looked at the worst accidents that could occur, and even postulated the likelihood of any—what I would call "rupture" of that cask—and we don't see the scenario that you talked about, having the cask break open, as being one in which you would all of a sudden have the material spilling out. At the worst it would tend to be a fracture——

Senator REID. But I've seen the picture of the truck running into the wall and the barrel bouncing out.

Mr. THOMPSON. Right. And as we've said earlier, what you would likely have is a stream of radiation along the lines that Mr. Rusche described, coming out where you would have lost your shielding capability for that activity.

Senator REID. I appreciate your answer.

Give me the difference in simple terms, Mr. Rusche, between an MRS and a permanent repository. One, you're going to dig a hole in the ground; either Yucca Mountain, Hanford, or Deaf Smith—that's the permanent repository, right?

Mr. RUSCHE. Yes, sir.

Senator REID. What's the difference between the MRS and the geological siting.

Mr. RUSCHE. I think the simple difference is that a geologic site is chosen to permanently isolate the material from the biosphere. An MRS is a facility that is aimed at use for some indefinite but short time, in comparison——

Senator REID. I understand that, but tell me, what are you going to physically do with the material—say, for example, at Clinch River?

Mr. RUSCHE. We would receive the material in casks from reactors, either by train or truck. We would take the fuel into a handling and preparation building——

Senator REID. Still inside the casks.

Mr. RUSCHE. Inside the cask. Open the cask, remove the fuel, put it into an environment in which we can consolidate the fuel——

Senator REID. Why don't you just leave them in the casks?

Mr. RUSCHE. There is an advantage in consolidating——

Senator REID. We've already established there's nothing wrong, that the casks are safe, so why not just leave them in the casks?

Mr. RUSCHE. I believe a moment ago, before you arrived, I indicated that we seek, for the final package to go in the repository, a container which will then be sealed, primarily and likely, by welding, which is clean on the outside so that the repository internally is a relatively clean operation, from reactor sites. Casks are loaded with fuel that comes from water and are not sealed in such a container as I've just described. We would do that operation, as well as consolidation, at the MRS.

Now, you are exactly right in that the material received from the reactor could be shipped to the repository in the casks that we're talking about; but even there, when received at the repository, it would be necessary to repackage it into the sealed container in the manner that I have just described.

Senator REID. At the MRS, would the material be buried?

Mr. RUSCHE. I beg your pardon?

Senator REID. Would the material be buried at the MRS?

Mr. RUSCHE. Our proposal is to use dry storage on the surface. In effect, we would have large concrete cylinders which might be 15, 18, maybe 20 feet high and 8 or 10 feet in diameter with a cavity into which would be inserted several fuel elements, depending on their age and type, and they would be stored in an atmosphere that is dry for an indefinite period. On the surface, just like on a parking lot.

Senator REID. Mr. Rusche, are you aware of the statement that Mr. Udall, the Chairman of the Interior Committee, made yesterday regarding the permanent repository?

Mr. RUSCHE. No, sir.

Senator REID. I wanted to bring that with me, but on my second trip here I didn't. But I would direct your attention to that. It's my understanding that the chairman of the full committee basically said yesterday or the day before that the permanent repository program hasn't worked and that we should start all over. I think that for Chairman Udall to come that far is certainly a change and indicates the problem that we have with the permanent repository program.

I have no further questions, Mr. Chairman.

Senator BREAUX. Mr. Rusche, I'm just showing to Senator Reid the part of your testimony that is the sealed storage cask, the monitored concrete proposal.

Mr. RUSCHE. Indeed. Yes, sir.

Senator BREAUX. I was confused as to whether this would be taken from the MRS facility and transported in this form to the permanent repository? Is that the concept at this time?

Mr. RUSCHE. No, sir. That is the sealed storage cask that we would have at the MRS, which would be there for a period of time.

Senator BREAUX. This would have to be repackaged, then, I take it?

Mr. RUSCHE. It would be repackaged into a shipping container which would be suitable for shipment by rail, which would then be shipped to the repository for final disposal.

Senator BREAUX. So it would be repackaged at the MRS?

Mr. RUSCHE. Correct.

Senator BREAUX. It would have to be repackaged again at the permanent repository?

Mr. RUSCHE. No, sir. The cask that it is shipped in would be suitable for handling at the repository, and the sealed containers in which the fuel is then contained would then be unloaded from the cask at the repository, and they would be suitable for emplacement at the repository.

Senator **Breaux**. They would not have to be repackaged at the permanent repository, they would just have to be unloaded, I take it?

Mr. **Rusche**. Correct.

Senator **Breaux**. All right.

Mr. **Rusche**. There's a great deal of detail in the proposal that, if there is interest by Senator Reid or others, I'd be happy to spend some time privately and direct your attention to some of those sections, given the opportunity.

Senator **Breaux**. I was interested in the discussion that you had with Senator Reid about the effect of a cask breaking. If I remember correctly, at the Energy Committee hearing Senator Johnston had asked you a question which was, based on a scenario of a plane crashing into an MRS versus that same thing happening at an operating plant. You described, at that time, the difference in the potential of something happening at an MRS versus something happening at an operating reactor using that scenario. Would you discuss that briefly for us?

Mr. **Rusche**. In both cases, we believe that the likelihood of something happening that would adversely affect the health of the public is small, but the primary difference between a reactor and a storage facility of this sort is the age of the fuel and, in particular, its stored energy.

As Mr. Thompson has described the circumstances in a storage cask and the steps that are taken to assure that it is a reliable and high-integrity environment, it is further different by the fact that even if the environment is ruptured or breached in some means—by a crack, as he suggested—there are not many physical forces that are operating to cause the material to do anything else. In a reactor, if you have this system operating in a pressure vessel and it's very hot and you have steam, such rupture of a system carries with it the potential for the material to be dispersed. In storage and transportation such as we're talking about, this is a very much smaller and almost nonexistent problem. It is the inherent radiation itself, which is not particulate in nature; it is electromagnetic, and it's just like light. If you have a crack, some can get out, but the particles don't move in that sense.

Senator **Breaux**. You spoke of a potential problem of someone coming in contact. The question is, how close is too close? Are we talking about something that bursts open for whatever reason at the Clinch River site, if that's the site, is it too close to the entire State of Tennessee? Is it just the county? Or is it just the building, or is it just the room? I mean, what type of parameters are we looking at?

Mr. **Rusche**. It's the general area, and it would depend on the size of the break. But again, to take the limit, if you stored the material—if you had the material all out of the cask and had it stored in air, I expect if you were several hundred feet away you would not have a problem.

Senator **Breaux**. Mr. Fultz, you had a comment?

Mr. FULTZ. I would just like to make you aware, Senator, that at the request of several Members of Congress the GAO has reviewed the shipments of the damaged fuel from the Three Mile Island reactor to Idaho Falls. That report is in the very final stages of processing and should be released within the next couple of weeks. I will make sure that you get a copy of that report, along with you, Senator Reid.

Senator REID. Have you got any hints as to what's in it?

Mr. FULTZ. I beg your pardon?

Senator REID. Any hints as to what's in it?

Mr. FULTZ. Since that report was done at the request of other Members of Congress and they have not released its contents, it would be inappropriate for me to discuss it. But I am sure they will release it very soon.

Senator BREAUX. Mr. Thompson, do you agree with the scenario that Mr. Rusche outlined with from a safety and health standpoint?

Mr. THOMPSON. Yes, sir. The one thing I was trying to come to grips with is the discussions we've had with respect to the risks from these severe accidents of the cask shipments. As I mentioned, I think, in our previous testimony, we have done this modal study to look at the likely impacts that would have occurred even in the most severe accidents, in which we had minor radiological releases about once in 80 million miles. For the severe accidents that have occurred to date, even the most severe that did not involve radiological shipping casks—we just tried to find what was the worst accidents that have occurred—we would find no release of radioactivity whatsoever. That doesn't mean that they would not have been bad accidents, but they would not have had any release of radioactivity from the shipping casks.

Senator BREAUX. Well, we thank you very much. Mr. Fultz, we appreciate the work that GAO has done and the report that has been submitted.

We may have some additional questions that we will be submitting to you. This panel is now excused. Thank you for being here.

We'd like to welcome up next Mr. Ben Smith, who is Executive Administrative Assistant, Department of Health and Environment for the State of Tennessee, who is presenting testimony on behalf of the Governor of the State of Tennessee, the Honorable Ned Ray McWherter.

Mr. Smith, we are glad to have you.

STATEMENT OF BEN SMITH, EXECUTIVE ADMINISTRATIVE ASSISTANT, DEPARTMENT OF HEALTH AND ENVIRONMENT, STATE OF TENNESSEE, ON BEHALF OF GOVERNOR NED RAY McWHERTER

Mr. SMITH. Mr. Chairman, members of the committee, thank you for the opportunity you have provided here today for us to present the concerns of the State of Tennessee. What I'll be providing to you is basically a summary of a longer written statement by Governor McWherter which has already been provided to the committee staff.

The State of Tennessee rejects the proposal to develop an MRS at Oak Ridge. This is the position of both the Governor and the General Assembly. Tennessee has rejected the MRS proposal because the DOE has failed to demonstrate a need for this expensive project.

Also, the DOE proposal is not a viable solution to the problem of isolating nuclear waste from the human environment. Rather, it is a temporary solution, inappropriate for waste materials that will remain dangerously radioactive for 10,000 years.

Let me add here that this is a large environmental problem that we feel strongly about, contrary to Mr. Rusche's earlier testimony that our concerns in Tennessee were only business and political.

The Nuclear Waste Policy Act provides the States with certain rights and participation in structuring a national system for final disposal of spent nuclear fuel. Tennessee has participated by conducting a rigorous analysis of the MRS proposal. We have taken a constructive stance by proposing ways to improve the nuclear waste management system.

We believe a better system can be devised, one which results in less risk to the public and lower cost. The need for this project is really gauged, in large part, by projections of the amount of spent fuel which nuclear utilities will generate. The Tennessee study team took an independent look at projections of spent fuel and recommended a different set of assumptions for projection. The most significant recommendation was that increased burnup of fuel should be taken into account. DOE has only recently modified its projection assumptions along these lines. Two years ago, the DOE projections for spent fuel discharge for the year 2000 were 20 percent higher than the Tennessee study team. Today, the difference is only 2 percent.

As the waste volume projections drop, so do the avoided reactor storage costs attributable to MRS. You should know that the actual cost savings of avoided reactor storage will not be $150 million to $450 million, as earlier projected by DOE. The savings with an MRS will likely not exceed $100 million if a repository is developed on time.

Really, the reactor storage problem may well be solved by the management at individual reactors determining the appropriate mix of transshipment between reactors, on-site transfer between storage pools at existing reactors, at-reactor rod consolidation, and dry storage. Already at a number of reactors there are decisions to consolidate fuel, and between now and 1998 there will be other decisions. Such early initiatives by the utilities are consistent with the DOE assumption that consolidated fuel is the desired waste form for repository emplacement. Several at-reactor rod consolidation demonstrations have already taken place; others are planned by private firms anxious to do the job in a competitive business fashion and to prove that the process can be done safely.

There have been no licensing difficulties in carrying out these demonstrations, and when the consolidated fuel is placed back in to the storage pools, unit costs will be lower than for MRS fuel handling and storage.

We have heard it testified that storage costs at reactors would be comparable to storage costs at an MRS, but this does not take into account the additional cost of transporting that fuel to an MRS.

For some reactors where further pool storage may not be appropriate, the fuel—either consolidated or not—can be kept at the reactor site in dry storage casks. The technology for such casks is nearing maturity. Such a cask is already licensed for use in West Germany, and there have been successful demonstrations here.

We understand that the utilities and the NRC are moving toward general licensing of dry storage casks at reactors without additional site-specific approvals. This means that the licensing process for this solution can be streamlined, contrary to the concerns that we've heard expressed by DOE about a licensing morass.

Taken together, the advancing technologies in at-reactor rod consolidation and dry cask storage and the diminished projections for the volume of spent fuel which will be generated all strongly suggest that the primary functions for which an MRS was conceived might well be handled routinely by the reactors by the time an MRS can even become operational. When these factors are fully considered it is clear that there is no immediate crisis of accumulated spent fuel at our reactors. We just don't need an MRS to tide us over until a repository is ready.

This committee should have a look at the very short list of reactors which would actually use the storage capacity of an MRS. If you look at the fuel acceptance schedule for MRS, the limit on fuel inventory is reached in 10 years. There will be a very short list of reactors that would actually use the storage capacity at an MRS.

Many of the Nation's utilities are already involved in advancing sound management of America's nuclear waste. They are proving at-reactor rod consolidation and dry storage. These efforts should be reinforced and rewarded. DOE could begin by developing a credit system for fuel consolidated at the reactors. Such a system of credits would recognize the benefits to the waste management system that result from fewer casks and fewer shipments through the States.

DOE should concentrate on cask designs that serve both reactor storage and transportation functions. These are called "dual-purpose casks." Such casks would reduce fuel handling and worker exposure. An appropriate family of dual- purpose casks should be standardized by DOE for competitive manufacture.

In addition, I would like to make another point that we feel very strongly about, regardless of whether MRS is authorized. DOE should pursue plans to move more of the spent fuel by rail than is currently proposed. The benefits of such a proposal would be substantial. With large rail casks, fewer shipments would be necessary, and costs and radiation exposure to the public could be reduced. To maximize the use of this mode, DOE should become actively involved with the utilities in upgrading the cask handling and shipping capabilities of some of the reactors. The nonstandard shipping capabilities of our reactors should not be allowed to stand as a constraint to creating an optimal waste management system for this nation.

Tennessee's studies indicate that these improvements could reduce the number of cask miles of shipping through the States down from 1.4 million annually with an MRS to 1 million with no MRS and an improved transport plan that makes more use of rail.

We feel strongly that such improvements should be implemented regardless of the decision on MRS. It will reduce the cask miles through our State and all the other States that would be affected.

This committee should have a look at the costs and the benefits of MRS. The life cycle system cost increases attributable to the MRS climbed from $2 billion to $2.6 billion between December 1985 and April 1986. You heard testimony that the increase in the life cycle costs would be $1.6 billion; this is a recent development. When the estimates were reduced downwards, the reasons were inadequately documented. The General Accounting Office has revealed that there are other cost items which are not included in the estimate, some very expensive items. One such item is likely compensation to the impacted State and community which could easily reach $1 billion.

Projected economic benefits fall far short of justifying the enormous cost of an MRS. The most favorable scenario of benefits includes a repository in Washington and produces only $650 million of benefits.

MRS cannot be justified, as DOE has attempted, on subjective statements of improved system management. You need to take a close look at the very tight schedule linkage between MRS and the repository development and consider the fact that the MRS inventory comes up to its proposed limit in just 10 years, and then try to visualize DOE's claims of benefits of system flexibility and reliability. The claimed benefits just aren't believable when you look at these constraints.

The State of Tennessee is deeply concerned about the events of the past year regarding implementation of the Nuclear Waste Policy Act. During this period there has been an ominous drift away from the act's original intent, along with a false sense of urgency about the need for a temporary waste storage facility. The changes are evident in the recently-proposed mission plan amendments which move MRS to the forefront to receive spent fuel at the same time a permanent solution is delayed. This DOE proposal is accompanied by statements from some utilities, some nuclear industry representatives, and as you heard this morning from the NRC, calling for unrestricted use of the MRS. They seek to drop the schedule linkage to repository development proposed by DOE and call for lifting the cap on MRS storage capacity. Such actions and statements point toward a mind set that, in effect, would accept a temporary solution to a serious national problem with environmental implications for the next 10,000 years.

The question before the Congress is whether we are prepared to take a stand now and reject the notion that we can pass this problem on to our children and our grandchildren. Put very simply, Mr. Chairman, Tennessee wants no part of a de facto above-ground repository.

Implementation of the Nuclear Waste Policy Act seems to be in disarray. There are many concepts on what can be done. Some new ideas have recently been presented in the form of legislation which would represent radical departures from the Nuclear Waste Policy Act. Those which seek extensive above-ground storage systems are most objectionable because of the shift of the final disposal burden to future generations. You heard testimony on those proposals this morning.

S. 839 provides an incentive system which might be helpful in some respects, but this bill suffers from so many flaws that we must object. Incentives might be appropriate for a facility such as an MRS which could be sited in a wide range of geological settings, but incentives may not be appropriate for siting a repository unless it can be assured that only those candidates with technically adequate sites may apply.

Beyond the concept of incentives, S. 839 seeks to authorize an MRS without further examination of the need for such a facility and without regard to the cost of the project versus the benefits. Clearly, a determination of need needs to be examined further before we proceed to offer incentives for a State to host such a facility. S. 839 strips away the protections for the host States that were wisely included in the original Nuclear Waste Policy Act. It seems doubtful that States will be willing to trade these safeguards for the incentives that are offered.

As a final note, I want you to know that Tennesseans are disappointed that siting of the MRS was accomplished without participation by the State. Our State was singled out before any discussions with DOE took place. Tennessee was not afforded the same rights as States chosen as potential candidates for repository sites. We do not think the Congress intended for the MRS host State to be selected in this manner.

The people of Tennessee and our State Government are unconvinced that MRS is either economically or environmentally sound. We urge you to examine this proposal closely.

I would be happy to answer questions that you might have.

Senator BREAUX. Thank you very much for your statement on behalf of the Governor and the State of Tennessee.

The question of Tennessee's submitting their notice of disapproval on behalf of the Governor and the legislature is at issue because of a question of timeliness. My question to you is—Senator Sasser is planning on introducing a resolution, if he hasn't already, which would say that the notice of disapproval, in fact, is premature.

I guess the State of Tennessee would support that just to get a clarification of what the situation actually is because of the uncertainty of it?

Mr. SMITH. We had sought clarification on when the notice should be issued. We sought that in the Federal courts, but we could not get such a clarification from the Federal courts. Therefore, out of an abundance of caution, not wanting any deadline to pass us, the Governor issued the notice of disapproval and the General Assembly issued a notice of disapproval.

Clarification would be helpful. We sought that.

Senator BREAUX. In other words, you just want to know when is the appropriate time?

Mr. SMITH. We just didn't want a deadline to pass that we should have acted on.

Senator BREAUX. Witnesses that will follow you from Oak Ridge, including the Mayor of Oak Ridge, his testimony and that of the Clinch River MRS Task Force—I don't want to paraphrase with any degree of accuracy, but I think it's fair to say that their testimony will indicate, and the resolution that they submit to this committee indicates, that the task force has determined that the facility could be built safely and operated in the Roane County portion of Oak Ridge, provided certain concerns are addressed and impacts mitigated.

Assuming that the recommendations of the Mayor and the task force were to be included in any MRS proposal, would the State of Tennessee—in contrast, say, to Oak Ridge and the task force—would the State continue to oppose the siting of the MRS facility?

Mr. SMITH. Mr. Chairman, we would continue to oppose the facility because of factors that were not considered by the Clinch River Task Force. The Clinch River Task Force assumed that if a facility was coming to Oak Ridge, that they wanted to define the set of conditions and safeguards that would be necessary to accept the facility. That task force did not examine the larger question of the economic impact on the entire State of Tennessee. They did not examine the need for the project; they did not examine the amount of cost of that project that would be borne by Tennessee ratepayers. We estimate that about 10 percent of the project will be paid for through the TVA system, and that if the project costs $3 billion, the people in the Tennessee Valley are going to wind up paying $300 million for the project. Therefore it's relevant for us to examine the need for the project and the cost versus the benefits.

Our primary position is based on our finding that the project is not needed, that the costs far outweigh the benefits, and that there are larger economic impacts to the State of Tennessee that go beyond those identified by the Clinch River Task Force.

However, if the project were determined by the Congress to be needed, and if the Congress decided to site the facility in Oak Ridge, then the work done by the Clinch River Task Force provides an excellent model and a beginning place to define those kinds of conditions and safeguards that we would need to put in place. So we think the work of the task force is very valuable from that respect, and we don't retreat from their findings at all. It's just that we looked at it from a little larger perspective.

Senator BREAUX. Senator Reid, any questions?

Senator REID. I have no questions.

Senator BREAUX. Thank you very much, Mr. Smith, for your testimony. I think it's well presented.

Let's welcome up at this time Mr. Don Schaufelberger, General Manager of the Nebraska Public Power District from Columbus, NE, and Mr. Brooks Yeager, Washington representative of the Sierra Club here in Washington.

Gentlemen, we welcome you. Mr. Schaufelberger, we have you listed first; we'd be pleased to receive your testimony.

STATEMENT OF DON E. SCHAUFELBERGER, PRESIDENT AND CHIEF EXECUTIVE OFFICER, NEBRASKA PUBLIC POWER DISTRICT, REPRESENTING THE EDISON ELECTRIC INSTITUTE, THE AMERICAN NUCLEAR ENERGY COUNCIL, UTILITY NUCLEAR WASTE MANAGEMENT GROUP, ELECTRIC UTILITY COMPANIES NUCLEAR TRANSPORTATION GROUP, AND THE ATOMIC INDUSTRIAL FORUM, ACCOMPANIED BY LORING MILLS, VICE PRESIDENT FOR NUCLEAR ACTIVITIES, EDISON ELECTRIC INSTITUTE

Mr. SCHAUFELBERGER. Mr. Chairman and members of the committee, good morning. My name is Don Schaufelberger; I am President and Chief Executive Officer of Nebraska Public Power District. I am appearing today on behalf of groups that represent the electric utilities with nuclear energy programs, who are currently the sole financial supporters of the DOE activities under the Nuclear Waste Policy Act of 1982.

With me today is Loring Mills, Vice President for Nuclear Activities of Edison Electric Institute.

I request that my full statement be entered into the record, and I will briefly summarize it at this time.

Senator BREAUX. Without objection.

Mr. SCHAUFELBERGER. In the best interests of implementing the act, I urge Congress to authorize, fund, and not to restrict the use of the Monitored Retrievable Storage facility. This would be a large step toward the goal of meeting the national need for a high-level radioactive waste disposal system, and the only means by which DOE can fulfill the statutory and contractual obligation to take spent fuel by January 31, 1998.

The Congress is faced with a choice between having a repository only system, or a system with an integrated MRS and repositories. There is no question that the high-level radioactive waste disposal system can be designed and operated with only the repository; however, the risks associated with that path seem to us unreasonably high. The repository only approach would require all parts of the disposal system to be in place and to operate together for the first time when DOE begins receiving spent fuel at the repository, some 16 years from now.

We strongly believe that the MRS, a separate facility that would be integrated into the disposal system and operated earlier, would provide the necessary experience in facility licensing, large-scale spent fuel handling, transportation, institutional relations, et cetera, that is needed for the repository to be a success. It is this strategic and critical role of the MRS that most critics, including the GAO in its June, 1987 report, have failed to recognize.

The electric utility industry supports the MRS facility. I cannot emphasize that enough. This support is for the MRS as an integral part of the repository program because it would perform functions essential to the disposal of spent fuel. It will also provide vitally needed flexibility in the planning, design, construction and operation of the disposal system, thereby lessening the effects of the uncertainties that the DOE faces. However, the MRS is not acceptable for long-term disposal, which must be accomplished in deep underground repositories.

The MRS would allow progress toward the operation of the disposal system earlier than would be the case with a repository only system. Having the MRS in the disposal system would help bring the first repository into operation sooner by separating the surface and subsurface parts of the system.

The proposal also recommends that Congress authorize substantial benefits to the MRS host State and local communities. We recommend that MRS incentives similar to those contained in S. 839 be incorporated in the MRS authorizing legislation.

The MRS should be located on a readily licensable site. The MRS authorization should include specific and complete directions for siting the MRS facility.

It is imperative that concerns regarding the nuclear waste program implementation be resolved and Congress take positive action to assure that a national high-level radioactive waste disposal system become a reality. Besides authorizing and funding the MRS, as I have recommended, we also urge Congress to move the program forward by funding the characterization of the potential first repository sites, including provisions for exploratory shaft drilling.

Thank you for this opportunity to present our views on the MRS. We would be pleased to answer questions.

Senator BREAUX. Thank you, sir.

Mr. Yeager.

STATEMENT OF BROOKS YEAGER, WASHINGTON REPRESENTATIVE, THE SIERRA CLUB

Mr. YEAGER. Thank you, Mr. Chairman. I will try to summarize my statement, if I may have it included in the record.

I want to thank you for the opportunity to present our views on the Department of Energy's program and on the MRS.

As you know, we are a national conservation organization, and I think that is significant primarily because we have members in each of the States that are under consideration for the location of these facilities. At the same time, we also have members in all the States where spent fuel and Defense nuclear wastes are currently stored. For those reasons we have taken an active interest in the implementation of the Nuclear Waste Policy Act since its inception.

As a matter of national policy, we agree that the Federal Government should have the responsibility for the final disposal of commercial as well as Defense nuclear wastes, and that geologic disposal offers the most promising technical option for isolating this lethal material for the hundreds of thousands of years necessary for it to decay to acceptable levels. However, we have opposed MRS as an unnecessary and unwise addition to the Federal high-level waste program, and I would like to briefly touch on the reasons for that decision.

First of all, we don't believe that it's needed for a functional high-level waste management system. Although one of the Department's principal arguments for the facility is that it would be used as a "buffer" which would be used to decouple the spent fuel acceptance and shipment schedule from the repository loading schedule, this function can be accomplished more efficiently through the use of a temporary storage and handling facility at the repository itself, a facility which will be necessary in any case.

Second, believe that the development of an MRS-based high-level waste management system will inevitably undermine the institutional commitment to final disposal in a geologic repository, which is at the heart of the Nuclear Waste Policy Act.

As you are aware, the schedule for the development of the first high-level waste repository has already slipped by at least 5 years, and as a result of DOE's mishandling of the site selection effort the scientific rigor necessary to ensure the credibility of key siting decisions has been squandered, and the technical adequacy of the current pool of sites has been thrown into question. In such an atmosphere, the temptation to substitute indefinite storage for permanent disposal will grow, and the threat that one or more MRS facilities could become de facto repositories will intensify.

Third, as has been touched on by other witnesses, we believe that the MRS will increase both the total transportation burden and the total cost of the high-level waste management system.

Fourth, we believe the MRS is not necessary as a safety valve. Utilities can continue to store spent fuel on site after 1998, particularly with the availability of modular dry storage casks, and we believe arrangements could be made so that utilities would not have to endure a financial penalty for the fact that the Federal Government misses the waste acceptance deadline of 1998.

I'd like to talk a little bit about the history of the MRS as a way of explaining why we're so uncomfortable with the concept. As you are aware, facilities for the surface storage of high-level nuclear waste, whether under the name of MRS or Retrievable Surface Storage, have been considered for many years as supplements to or substitutes for geologic disposal. There has been a whole series of functions that have been outlined for such facilities: permanent or semi-permanent storage, interim storage prior to reprocessing, storage of spent fuel prior to disposal, preparation and temporary storage of spent fuel for transshipment, providing a disposal system buffer. All are reasons that have been given at various times as the need for this facility.

The AEC proposed retrievable surface storage after the first geologic program at Lyons, KS failed in the early 1970's, and it was considered seriously by the Federal Government at that time as an alternative to geologic disposal. But it was rejected, and I think the most telling argument against it was stated in the Carter Administration Interagency Review Group's final report in 1979, which was that "the responsibility for establishing a waste management program shall not be deferred to future generations. The system should not depend on the long-term stability or operation of social and governmental institutions for the security of waste isolation after disposal."

The Nuclear Waste Policy Act requires a DOE proposal for a retrievable surface storage or MRS facility, but it doesn't authorize the development or construction of one. We believe a reasonable interpretation of Congressional intent for the facility is that it was envisioned as a long-term backup storage technology which would be available for authorization by the Congress and subsequent construction, should a clear need arise.

DOE's proposals for MRS, however, have been quite different from what, in our interpretation, Congress envisioned. It was first proposed after the passage of the Nuclear Waste Policy Act as a center for repackaging and a transshipment center, a sort of packaging and handling facility like Federal Express' Memphis Airport operation. DOE argued that it would enormously increase the efficiency of the spent fuel shipment system; however, there have been a number of studies which have followed that original proposal in which those conclusions about the benefits of MRS have been disputed. I list some of them in my testimony, but basically the conclusion of these studies, which I think were quite seriously done, was that virtually all of the transportation efficiencies and system performance improvements that were claimed by DOE for an integrated MRS could be achieved by improved emphasis on transportation coordination and control and without the development of an MRS facility.

Now, in the revised mission plan, DOE has really changed their claim for what benefits this facility will provide. What they say now is that it will allow "accelerated waste acceptance from utilities, significantly reduce the need for new temporary storage capacity at reactor sites, and allow waste acceptance to begin by 1998," despite the fact that there won't be a repository then.

So what we have really moved to, then, is MRS as a safety valve for the missing repository in 1998. For that reason I think it's reasonable to look at the 1998 date. You will see in my testimony, and I won't go into the details, that we went to some lengths to look at the history of how the 1998 date was established. And in fact, the date has no reality other than the fact that it was written into the law. The year 1998 was not a date by which any reasonable analyst would have assumed that the Federal Government could come up with a repository; in fact, it was 8 years shorter than the time that the Carter administration thought they could build a repository—and their schedule assumed they started site characterization in 1982. Nor was 1998 a date by which an aggregation of utilities would arrive at a spent fuel storage crisis; in fact, the utilities claimed during the Nuclear Waste Policy Act debate that they needed Federal centralized spent fuel storage by 1986. As we can see, that date has passed. In fact, the advent of dry storage has ultimately mooted the physical need of utilities for a centralized Federal storage system prior to the opening of repository.

I think that looking at the MRS as a safety valve for the system makes us, at least, realize the kinds of problems that are associated with it, and forces, us to agree with the anxieties of the people of Tennessee that they may be facing the location of a de facto repository.

The technical problems that are associated with the first round repository site selection aren't trivial. They are very serious, and we believe that they will have to be resolved by the Congress. However, as I will mention in discussing the three bills that are before the committee, we don't believe that it's time to abandon the geologic program. We believe the ultimate effect of moving to an MRS system ahead of the geologic program will be to take the institutional momentum entirely away from that effort.

Three bills have been introduced in the Senate so far which would drastically—or in some cases, less drastically—alter the framework which Congress established in 1982 for the high-level waste effort. Two of the bills, the bill by Senator Hecht, S. 1141, and S. 1266 by Senator Evans, would in effect substitute long-term storage for geologic disposal as the goal of the Federal high-level waste program. For the reasons that I outlined previously, and under our basic agreement, really, with the Carter administration's Interagency Review Group, we think that's a bad idea.

On top of that, both of those bills really are based on a real concern over the status of the geologic program, but at the same time a less objective analysis of what the alternatives of such a program would be. The underlying assumption of both the Hecht and the Evans bills seems to be that long-term storage, and perhaps reprocessing, would be advantageous in themselves, but I think the previous record of reprocessing efforts, both in the United States and world-wide, makes these assumptions quite dubious.

While those bills are based on the assumption that the repository siting effort is essentially hopeless, S. 839, Senator Johnston's and Senator McClure's bill, seems to assume that there's nothing really wrong with it except that perhaps it's expected to cost too much, and that public resistance has grown so intense. The result of the approach taken by S. 839 would not be to correct the technical deficiencies that have plagued the DOE repository siting program because it doesn't address those deficiencies. The basic assumption behind the bill seems to be that it is politics primarily that is holding up the high-level waste siting effort, that a repository can be sited safely almost anywhere—or for that matter, an MRS—and that a well-placed financial incentive will mollify the concerns of citizens who heretofore have opposed the location of high-level waste facilities in their communities. Unfortunately, these assumptions aren't correct.

Our concern is that it has been a series of mistakes, both technical and institutional, that have been made, and that have been quite severe; they have been made by DOE during the implementation of the program, and they have fueled public skepticism over the ability of the Federal Government to effectively manage the Nation's high-level waste, and that not just the willingness of the public to allow something to be sited has to be addressed through the mechanism of a "bribe," if you will, or an incentive agreement, but what really has to be addressed is the handling of the program to date. The program has to be put on a more sound technical and institutional footing. We believe that there are efforts underway that principally—I know that Senator Sasser has been working on legislation in an effort to suspend site activities for a temporary period of time while panel or a commission would review the DOE siting programs in an attempt to make the kinds of mid-course corrections that would be necessary to put it on a more sound footing with a better chance of success. We believe those kinds of efforts ultimately are more realistic and have a better chance of returning us to a sound high-level waste program than do the bills that are before you today.

Senator **Breaux**. Thank you, gentlemen, for your testimony.

Mr. Schaufelberger, Mr. Yeager says that utility companies can better just keep it on site; it would be a lot simpler and you wouldn't have to pay the transportation costs; we recognize that you've contributed to a waste disposal program that the Government has said would be available by 1998, but we'll give you a credit to make sure it doesn't cost you anything, but keep it on your own site.

Why isn't that a good idea?

Mr. SCHAUFELBERGER. Well, for one reason, we feel very strongly that we should proceed with these waste disposal programs. Our plants over the country are designed primarily for providing electricity to our consumers. Our plant staffs are highly skilled in performing that activity and for handling the waste preparatory for shipping. That's the way the plants were designed. And to add this additional function might well take away from the main purpose of these staffs of these plants and add another dimension to the requirements that we think could be handled much more efficiently in a centralized point for taking care of concentrating, getting it ready for the permanent storage, than to be done at individual sites.

Senator BREAUX. Wouldn't you still be temporarily storing it preparatory to shipping it to a permanent site? You're storing it now; you're going to be storing it for a number of years. I think some suggest, why not just continue to store it a little bit longer until we get the final repository site completed and ship it there instead of shipping it to Clinch River, where it's going to have to be shipped somewhere else ultimately again? And we'll pay you to do that. And some of the plants, like Virginia, are developing the dry cask system; they've got technology that allows them to take it out of the water storage and into the dry cask storage, and it seems to be working there. Why spend a billion dollars to have another temporary spot that's going to sit until we ship it somewhere else permanently?

Mr. SCHAUFELBERGER. It just seems to me that a centralized facility is better equipped, where it can be done in a mass manner—it can be done better than in each individual reactor location.

Senator BREAUX. I hear what you're telling me, but I don't understand why. I don't want to be too persistent on it, but if you're storing it already at the plant, and every plant that has it is storing it there now, why is it so much more complicated just to continue storing it there? You wouldn't be doing anything really different than you're doing today, and we'd pay you to do it. You're already storing it there; I think the suggestion is, just store it there for a few more years—20 years, or whatever—until we have the permanent repository. It seems like it makes sense at first blush. I'm trying to find out why, because what you're saying is that it's more efficient to collect it all and ship it somewhere else, and then eventually take it from that place and ship it somewhere else once again. That seems more complicated than just leaving it at the utility site that's storing it already.

Any thoughts on that?

Mr. SCHAUFELBERGER. Might I have Mr. Mills comment further on this?

Senator BREAUX. Sure.

Mr. **Mills**. Thank you.

I believe one of the confusions that does seem to crop into the program is the word "storage." One recognizes the Monitored Retrievable Storage as defined by the proposal to Congress as something quite additional to storage. It is the location on which many of the essential functions of the waste program would be performed prior to the fuel being disposed of at the repository, and it is appropriate to perform those additional functions of waste packaging, repository-ready packages, at a central facility which is the purpose of that facility.

Senator **Breaux**. But is there any technical or engineering reason why that packaging operation that you just described could not also be done at the utility site itself?

Mr. **Mills**. It cannot technically be done as efficiently at 74 different reactor sites as it could at one site where it is a dedicated purpose with the appropriate equipment to accomplish that task.

It could not be done as effectively at the reactor sites. Also as identified by the NRC witness, he indicated the difficulties associated with doing that at the individual reactor sites rather than at a central site.

Senator **Breaux**. Mr. Yeager, the argument can be made that if you're going to have a hundred separate storage facilities around the country, that you're not going to be able to monitor them as safely as you could a central monitored MRS facility that everything is collected at. The sole purpose of their operation is to store it temporarily and to package it properly as opposed to a utility which has to run the plant, make sure the plant's being run properly, make sure the work is being done properly. Engineers are trained specifically to generate power, not to package waste and to store waste. What you're recommending seems to be 100 plus sites that we're not going to be able to monitor, but we could easily monitor one site where everybody on that site is trained for one purpose. You're suggesting that we spread it out all over the country and have people with multiple duties, if you will, or multiple jobs—storing, generating power, making the plant run. How can that possibly be more effective than having it all handled at one site where everybody there is trained to do one thing?

Mr. **Yeager**. Well, I think that there's a number of—we have to disentangle a couple of different functions.

The utilities are all going to have to package this stuff for shipment one way or another, even if it's shipment to an MRS. It still has to be packaged at the utility for shipment, so they're never going to divest themselves of that function; nor are they ever going to divest themselves of some storage responsibility because, as designed, the MRS will only hold 15,000 metric tons, and the shipment schedule will be such that the utilities will still be shipping to an MRS while the MRS is shipping to a repository. They're always going to be unloading into their fuel pools and storing.

The real question is, Is that situation serious enough to warrant developing an entirely new Federal interim storage establishment, essentially? And does that storage establishment have other advantages that are sufficient to warrant the extra cost? And it clearly is an extra cost to the program of instituting an MRS and developing the facility. It would be the extra transportation load because you are ultimately running more cask miles if you're shipping to one facility and then to a repository after you ship to that facility.

Our feeling is that there isn't, that those advantages really aren't very clear. We do have qualms, I would say, in the long term if we thought that a geologic repository wasn't going to be ready for 50 years; then I think everybody would want to take a second look at the question. But if what we think is that we're going to miss our deadline by 5 years, or even ten years, does that warrant establishing a huge new Federal interim waste storage effort when, in fact, modular dry storage casks are available for utilities to use on site? As far as the issue of monitoring, they do have to monitor the spent fuel pools now, and as Mr. Rusche testified, the passive dry storage cooling technique is sort of an inherently safe—other than catastrophic accidents, we believe that dry passive storage casks on site can be a relatively safe enterprise which doesn't take what you would regard as an extreme use of manpower in monitoring it.

Senator **Breaux**. But would it not be better to allow that utility and their employees and their managers to concentrate on generating electricity and doing it in a safe and secure manner than also giving them the extra added task of developing a storage program for the waste? They are spread thin enough just running the powerplants, and what you are suggesting is that all of them ought to have a separate challenge, and that is to develop a storage program that's going to have to be supervised by their people and it's going to have to be monitored, and it's going to have to be safely handled.

Mr. **Yeager**. Well, I suspect it would be useful to look at the history of the TVA or VEPCO efforts, but they don't seem to have had that kind of enormous difficulty. They seem to have been able to take it in stride and undertake the necessary additions to their storage capacity.

Senator **Breaux**. You have both, accurately and eloquently presented your positions on this. I think you've got good points on both sides. It seems the Government's direction at this time is to go to an MRS as opposed to keeping it on individual sites. But I think that you've made some good points that need to be considered.

Mr. Schaufelberger, we thank you also for your presentation.

Mr. **Schaufelberger**. Thank you, Mr. Chairman.

Senator **Breaux**. Thank you, gentlemen.

I'd like to welcome up at this time the next panel, consisting of the Honorable Roy Pruett, Mayor of the City of Oak Ridge, Oak Ridge, TN; the Honorable Floyd Freytag, who is Judge and Co-Chairman of the MRS Study Group of Morgan County in Wartburg, TN; the Honorable Robert Peelle, who is County Commissioner and Chairman of the Environmental Study Group for Clinch River MRS Task Force, from Roane County, Kingston, TN; and Mr. Leon Lowery, who is representing the Tennessee Nuclear Waste Task Force from Knoxville, TN.

Gentlemen, we appreciate having you here. Mayor, we have already referred to your testimony, so we would like you to start off and give us your testimony.

STATEMENT OF ROY F. PRUETT, MAYOR, CITY OF OAK RIDGE, TN

Mr. PRUETT. Thank you, Chairman Breaux, members of the committee who are in the process of coming and going, ladies and gentlemen. Our full testimony has been submitted for inclusion in the record, but I would like to restate, highlight and emphasize some of the more important issues that were identified by the Clinch River MRS Task Force.

My name is Roy Pruett; I am the Mayor of the City of Oak Ridge, TN, and a member of the Executive Committee of the Clinch River MRS Task Force. It is an honor to be here today to testify before this distinguished committee and present the findings of the Clinch River MRS Task Force as they relate to subtitle (c) of the Nuclear Waste Policy Act of 1982, and to the Department of Energy Proposal on the Monitored Retrievable Storage facility.

As the committee is aware, I represent the City of Oak Ridge, which has been named as both the primary and the first alternative site for the proposed integrated MRS facility. I must say that as the potential host communities, Oak Ridge and Roane County are unique from other governments which may be impacted by the siting of an MRS. That is because, should it be approved, we are the citizens of Tennessee who alone will live on a day-to-day basis with the facility, with all its attendant concerns and risks, and it will be in our own back yard. As such, we have a particularly strong interest in maintaining a dialog with Congress and appreciate the opportunity afforded today to continue that process.

The Clinch River MRS Task Force was established in July, 1985 to study and recommend a community position relative to the proposed MRS facility to be built in Oak Ridge. Before I report the task force's conclusions, let me emphasize that it was not our charge nor our undertaking to determine whether the MRS was necessary to the nuclear waste disposal system; that is a decision that the Congress alone must make.

What the task force did conclude was that an MRS could be safely built and operated in Oak Ridge. We further concluded, however, that the facility would not be generally perceived as being acceptable unless the recommendations of the task force were adopted in order to address citizen concerns and help mitigate negative impacts of the facility.

The task force identified five major areas of concern regrading the siting of an MRS. Our concerns include the following.

One, the inherent health and safety issues which were—and still remain—our primary concern.

Two, the potential for the MRS to become a permanent site for storage of the Nation's spent nuclear reactor fuel.

Three, the adverse effect the facility may have on economic growth and diversification in the host communities and the region.

Four, the lack of assurances that all commitments made by the Department of Energy and the Congress will be fulfilled.

And, the possibility that our positive reputation for being a high quality community—which we are—could be displaced by an unfavorable image of being a "nuclear waste dump."

Regarding the MRS proposal as submitted to Congress, let me identify some elements which must be considered while forming the programs needed to implement the national policy for transporting, storing and disposing of nuclear waste. These are crucial elements for the local acceptability of the MRS as identified in the task force study, and have not been included in the Department of Energy's proposal.

First, the local host communities must be active participants in all deliberations with DOE concerning the facility. Congress must provide the authority for DOE to negotiate directly with these general local governments which will host the facility, and genuine local control must be provided to the community in a manner that will assure that our voices will be soundly heard.

Second, there must be equitable local representation on a citizens' environment, safety and health review board having substantive powers. The MRS could adversely impact the surrounding population and local environment. A board comprised of an equal number of members from the local communities and the State must be established in order to represent the local community interest. It is imperative that procedures be developed whereby the board could cause a suspension of operations by some sort of contractual agreement.

Since the principal impact of the MRS will be on local jurisdictions, consequently the local jurisdictions involved must have a substantially significant role in the oversight of the MRS planning, construction and operation.

Third, the MRS must not become a de facto permanent repository. The MRS facility could delay the construction and operation of a permanent geologic repository and become a de facto permanent storage site, which is one of our concerns.

Acceptance of the waste by the MRS must be denied until a construction authorization for the repository is received. The task force recommends that we limit the storage at the MRS to 15,000 metric tons of spent fuel, and to provide for a significant overdue removal penalty for fuel stored beyond a predetermined time.

In summary, let me identify some crucial elements which must be considered while forming the institutional mechanisms aimed at implementing a national policy for transporting, storing and disposing of nuclear waste.

Fair and adequate compensation must be provided to the affected jurisdictions. State and local governments must be adequately compensated for assuming the increased risk levels and uncertain consequences. Compensation to host communities must reflect the value of that service to the Nation, and we must recognize the socio-economic impacts and health and safety risks. Compensation, again, must be paid at a rate equal to the taxes which would accrue if the facility were privately owned.

General local governments hosting a facility must be compensated separately and directly. Host local governments have a unique role and responsibility. Additional compensation must be made in addition to that provided to the State or other affected local governments. Compensation must be guaranteed by the Congress through dedicated revenue sources, paid directly to the governmental jurisdictions in which the facility is operated.

In conclusion, the Department of Energy proposal for the construction of a Monitored Retrievable Storage facility in the Roane

County portion of Oak Ridge has addressed many of the concerns of the Clinch River MRS Task Force, for which they should be commended. Our association with Ben Rusche and Roger Hilley and others has been very, very cooperative.

The Department has failed, however, to include certain other important items, including local oversight and control of the facility and direct contractual agreements with the local governments for the host community, including the provision of direct compensation payments, which are of utmost importance to us.

Congress has the opportunity to amend the DOE proposal and accept the stringent but reasonable conditions recommended by the task force, which could make the MRS facility acceptable to the communities of Roane County and Oak Ridge. I encourage you to adopt the task force recommendations in total, and I will be pleased to try to answer any questions you may have, Senator Breaux.

Thank you, sir.

Senator Breaux. Thank you, Mr. Mayor, for your presentation and for being with us.

Next we will have Commissioner Peelle of Roane County. Commissioner?

STATEMENT OF ROBERT PEELLE, COUNTY COMMISSIONER, ROANE COUNTY, TN

Mr. Peelle. Mr. Chairman, I am Robert Peelle, a County Legislator in Roane County, TN, and Chairman of the Environmental Study Group of the Clinch River MRS Task Force. I bring greetings from Ken Yager, our County Executive, who really did want to be here but just couldn't make it, and ask that his written testimony be included with mine in the record when it comes in.

Roane County, as you have heard, has not taken a position on whether the MRS should be built. That is the task of the Congress. Roane County and the City of Oak Ridge did jointly appoint a task force, and it reported in 1985. Roane County then stated, to quote from our official action:

> The proposed MRS could be acceptable to Roane County and provide a net economic benefit to our citizens if conditions equivalent to those in the task force report are securely satisfied by the authorizing legislation and intergovernmental agreements provided for by that legislation.

That means the county believed the MRS proposed by DOE could be operated safely with adoption of our safety-related conditions. The State of Tennessee was supportive of our MRS study.

This means that an MRS run as a typical DOE project would not be accepted. Definite Congressional action is needed to make this different from a standard DOE project.

DOE's proposal now before the Congress makes a real effort to deal with the concerns in the task force report, but could not or did not fully satisfy many of them. Many citizens do not trust that Congress and the DOE will long continue to implement plans designed to satisfy local concerns. I am more optimistic than most, but there are few that believe that this will happen.

Let me hit a few of the high points.

Congress must assure that spent fuel won't stay forever at the MRS. Roane County's conditional willingness to accept an MRS was based on DOE's proposal for an MRS having limited fuel capacity and storage intervals; however, from the time that Tennesseeans first heard of the MRS, many have feared that spent fuel sent to the facility would never leave. That is not DOE's plan. However, people expect that the plan will one day be changed to greatly enlarge the MRS and make storage there effectively permanent. I think that's why many Tennesseeans persist in calling the MRS a "nuclear waste dump," though the drawings don't look like one.

So only if there's a strong linkage to a permanent repository which will make it evident that there is a plan underway and operating for a repository—only then will it not appear to be a dump to Tennesseeans.

We suggested strong linkages. The DOE has accepted two of those in their plan; two of the better ones that we proposed are not in their plan, and I think should be considered for inclusion by the Congress. These linkages should be accepted and guaranteed by binding contracts between the DOE and the State government of whatever State has an MRS. This needs Congressional attention.

Second, let's talk about the more general problem of building public trust by offering some local control over the facility. Public trust of Government institutions is low, including county government, I'm sorry to say, and trust of DOE in our area has been further damaged by revelations that emissions from Federal plants were not corrected quickly when national standards were put into place in the last two decades. The general distrust and this bad experience have led to fears that an MRS, designed so that it could be safe for the public, won't in fact be operated that way throughout its lifetime. People say, it won't work the way they say; something will go wrong. That's why the task force asked that the authorization of an MRS be linked to completion of the environmental cleanup of the Oak Ridge Reservation.

Now, how can we build trust? Our best idea to build trust, trust that an MRS will be safe, is to combat the helplessness felt by individual citizens in the face of a large Government project by instituting a measure of local control over the facility. We ask that an ongoing environment, safety and health review board for the facility be appointed by local governments and the State of Tennessee. The board would have full access to information, independent inspection and monitoring authority, and limited power to order that inbound spent fuel shipments cease if jointly preestablished operational standards aren't being met. Since local citizens could influence appointments and would know some of the board members, trust and safety would be increased.

The current DOE proposal embodies some of these ideas into a suggested MRS steering committee that would predominantly represent stakeholders far away, not so much in the immediate area. It would have broader jurisdiction, but less power. We see merit in the steering committee idea that DOE puts forward, but we believe that it would not replace the need for a locally-based review board concentrating on health and safety issues. Membership in that should be from the local area, people who would suffer personally if something should go wrong at the MRS.

Formation and empowerment of such a review board should be mandated by Congress because the concept is unusual, and therefore would be difficult for DOE to accommodate without Congressional direction.

The next major point, Congress needs to give the DOE affirmative authority and responsibility to meet local concerns. The Nuclear Waste Policy Act of 1982 doesn't give clear authority, for instance, for some of the arrangements requested by Roane County and included in DOE's submission to Congress. For example, there needs to be clear direction for grants equal to the taxes for an MRS similar to the authority already given for a permanent repository, and a direction for proposed payments at equivalent size starting at the time of authorization. This issue is a very sensitive one in Roane County because of the long-term difficulties we have had in obtaining any payments in lieu of property taxes for the extensive local DOE research and production facilities. We did get them for a while.

The Nuclear Waste Policy Act also doesn't clearly permit the DOE to negotiate binding agreements with local government units. Indeed, DOE's proposal, working within the laws that they had available to them, calls for achieving its commitments to Roane County through negotiations between the DOE and the State of Tennessee. We anticipate that State officials will cooperate with us in meeting our needs, but we would prefer direct arrangements and direct accountability. So we suggest that formal authority and encouragement be given to DOE to negotiate binding agreements directly with local government units on predominantly local issues.

To summarize, any MRS authorization should protect host communities in a reliable way. No matter what route Congress uses to authorize an MRS, if it does, the measures proposed by DOE to mitigate local concerns should be specifically included along with the additional points identified by the task force.

No one wishes to see nuclear waste host communities suffer. The Congress has to make sure these good intentions are realized. However, how can this Congress provide protections that future agency or Congressional actions will not easily set aside? You in Congress have had experience with this question. Our best thought is for the Congress to explicitly empower the agency to enter binding contracts with the local governments, including the major ingredients required to protect our citizens. Please provide for this stability of policy and implementation that may start to rebuild that trust in government in our area that has been lost.

We believe our requests are reasonable. We ask that the measures be provided by Congress that we ask, and we would be happy to work with you on details. Thank you for your attention.

Senator **Breaux**. Thank you, Commissioner Peelle.

Mr. Freytag.

STATEMENT OF FLOYD E. FREYTAG, COCHAIRMAN, MRS STUDY GROUP, MORGAN COUNTY, WARTBURG, TN

Mr. **Freytag**. Mr. Chairman, my name is Floyd Freytag. I am Cochairman of the Morgan County MRS Study Group.

I appreciate the opportunity of appearing before this committee on behalf of the people of Morgan County. This is my first appearance before a congressional committee of any kind, and when I left home my wife told me, "Don't go up there and make a fool out of yourself."

So I would like, Mr. Chairman, after this is over, for you to give me a little note to my wife that I can assure her I didn't make a fool out of myself.

Senator **Breaux**. I want you to know we get accused of doing that on a regular basis every day.

Mr. **Freytag**. I've prepared and filed with the committee a nine-page statement. I'm not going to bore you with reading all of those nine pages; I'm going to give you a few excerpts from that.

Mr. Chairman, our interest in this actually is S. 1266, but I'd first like to say this, that we people in Morgan County, TN, are aware that our Tennessee congressional delegation is opposed to the MRS coming to Tennessee, and we have no quarrel with that because we also understand that a vast majority of the people in Tennessee are opposed to the MRS coming to Tennessee, and we realize that our congressional delegation is doing what they do best, representing the views and the wishes of the people of Tennessee. But for some unexplained reason, the words "nuclear energy" do not arouse the same apprehension in the people of Morgan County that it seems to in people of other localities of our State.

The people of Morgan County have indicated, through resolutions passed by their elected legislative body and resolutions passed by elected city councils of the two incorporated towns in Morgan County, that they would accept and would urge the placement of the MRS facility in Morgan County if certain conditions are met that we filed in a report that we issued, that we sent to Mr. Ben Rusche some time back.

We believe that the location of the MRS in Morgan County could be of mutual benefit. In April 1985, the Department of Energy announced that three Tennessee sites were under consideration for the proposed MRS facility. Even at that early date, the Department of Energy had indicated that the Clinch River breeder site in Oak Ridge, TN, was their preferred site. We believe that the Clinch River site was a site that they had selected before they even came to Tennessee, and that their site selection effort was purely window dressing or camouflage. At that time we were reluctant to propose a site in Morgan County because we had no voice strong enough to secure us a hearing with the giant MRS; however, about that time important people, industrial people, the Governor of Tennessee, the University of Tennessee, became aware of the devastating effect that the location of this MRS facility could have on the Oak Ridge/Knoxville area. And I think that perhaps the Governor said it best. The Governor of Tennessee on January 21, Gov. Lamar Alexander, Governor of Tennessee at that time, released a statement, and a part of that statement said, "Oak Ridge is exactly the wrong place to locate it. It makes no more sense to put this repackaging plant in Oak Ridge than it would to put it on the Vanderbilt or the Georgia Tech campus, or in a Memphis City park, or at the edge of Washington, DC. It may be safe, but it is not the kind of thing that people want in their own back yard."

The Governor continued by saying, "The Knoxville area is becoming one of the most attractive magnets in America for good, new jobs. The State is investing hundreds of millions of new dollars in a technology corridor from the Knoxville airport to the Oak Ridge National Laboratory for a new technical institution, for a science alliance, for an interstate-quality highway and an improved University of Tennessee. The corridor for the next 20 years," the Governor said, "will be the focus of new jobs for the Knoxville area, just as the Research Triangle is for much of North Carolina."

Now, that's when we got interested in this matter. That's when we entered the scene, with the misgivings and apprehension that these important people had. We felt that with that background we could ask for the MRS to come be located in Morgan County. One thing that I'd like to say is that the Oak Ridge site is not carved in stone; all the investigations have indicated that there are at least 100 sites in east Tennessee that are comparable or as well-adapted to the location of the MRS as the one in Oak Ridge. There is no particular reason—no reason whatsoever—that this has to be located in Oak Ridge.

Now, the site that we propose, the site that we have tried unsuccessfully to get the Department of Energy to even take a look at, is 15 miles away from the Oak Ridge site. Now, the Morgan County site—now, what does the Morgan County site have to offer that the Oak Ridge site doesn't have? First, it is located on an 80,000-acre tract of uninhabited, State-owned land that is available for the construction of this facility. No family or no person will be disposed of their property or required to vacate their homes, or to disrupt their lives. Not only that, but it is estimated that 95 percent of the transportation connected with the MRS will be by rail. The site that we propose is 3.88 miles from a Class IV railroad. This spur to this railroad would be used exclusively by the MRS. It would lessen and cut down any opportunity of an accident occurring; and in case some unforeseen accident occur, it would cut down tremendously on the danger.

Access to I-40 and by I-40 to I-75 would also be through a remote area with light traffic. That would be almost exclusively for the MRS.

I listened to the presentation of my good neighbors over here to my right, and I was doing a little calculation while they were talking. I calculated that they were saying to the Department of Energy, we'll take this thing if you'll give us $50 million in benefits. I'd like to point out to you that Morgan County is a very poor county, that we have the highest tax rate of any county in the State of Tennessee. We have perhaps the highest per capita bonded indebtedness of any county in the State of Tennessee. Our bonded indebtedness is almost 25 percent of our assessed value. We are in desperate circumstances financially. We are unable to adequately finance our schools. Our children are being educated in substandard schools; our children are being cheated of the same opportunities that children in the rest of the State have.

I have made some calculations that the Department of Energy—we could cut our tax rate from $6.60 to $1.75, and it would only cost the MRS $7 million a year. That is a tremendous saving for the ratepayers of nuclear power.

The Department of Energy, we feel, could perform a very valuable service to the nuclear ratepayers, and at the same time provide desperately-needed assistance to the people of Morgan County by locating the MRS facility in Morgan County.

In closing, I'd like to say this. Let me say again that we are not here lobbying this Congress to bring the MRS to Tennessee; however, if this MRS must come to Tennessee, please locate it in Morgan County.

Thank you.

Senator Breaux. Mr. Freytag, I think we can report back that you did an outstanding job representing Morgan County. Take that message back to the people.

Mr. FREYTAG. My wife will be glad to hear that.

Senator BREAUX. Mr. Lowery.

STATEMENT OF LEON LOWERY, TENNESSEE NUCLEAR WASTE TASK FORCE, KNOXVILLE, TN

Mr. LOWERY. Mr. Chairman, first let me apologize for the disruption. I'll say my judgment as to when the committee might get hungry was at fault.

My name is Leon Lowery. I am President of Americans for a Clean Environment, an organization of residents of Roane County and Oak Ridge. We at Americans for a Clean Environment have joined with other organizations from across the State of Tennessee, some 30 organizations, in opposition to the siting of an MRS in east Tennessee or anywhere else, for that matter, and further have joined with the National Nuclear Waste Task Force in a program review of the entire nuclear waste disposal system.

Sitting here before the committee with the gentleman to my right, with whom I am familiar and am friends with, the thoughts that come to me are the differences in perspective between our point of view, Americans for a Clean Environment, and the point of view of the Clinch River MRS Task Force. When I reflect on that, it occurs to me that as a body like the Clinch River MRS Task Force examines a proposal like the MRS proposal by the Department of Energy, as you go along studying the details, looking at exactly how the governmental interactions would work, at exactly what kinds of committees and commissions might be set up for review, what kind of safeguards might be put in place, there comes what might be called a "presumption of reality." It begins to take on existence for the people who are involved in this kind of activity, an existence that may or may not be realistic. And the fact that this is just a proposal for discussion might tend to blur over simply from the immersion in the detail of the program, and detail gives that sense of reality.

This presumption, coupled with a sense of the power of the Department of Energy from our years of experience with the Department, leads many to a sense of fatalism, that the Department is going to be able to do whatever it wants to, that it is going to be able to build an MRS if it wants to, so what we might as well do is do the best we can out of it, be realistic about it and just try to maximize our influence on it.

Whatever the perceptions of State and local officials, whatever study is done of these issues, the interactions of the governments with these programs, there is another set of issues which must supersede these concerns. We can't decide to build an MRS anywhere for reasons of economic need of the area, for reasons of economic incentive for the area. We have to decide these issues on the basis of national need, with concern for what is best for the nuclear waste disposal system.

Throughout history, Tennesseeans have been known for a willingness to shoulder the hard jobs of our society; in fact, to the extent that we've been dubbed the Volunteer State—people like Davey Crockett at the Alamo, Sergeant York in the fields of France—Tennesseeans are known for their willingness to take on the hard jobs. But we do want to know one thing about the jobs that we're asked to take on. We want to know if this job is absolutely necessary.

We read the reports from the GAO which say that the Department's justification for the MRS is highly questionable. We read the studies prepared by the University of Tennessee Research Team and the State of Tennessee to which Mr. Smith testified earlier this morning. We read of the National Association of Regulatory Utility Commissioners calling in question the justification by the DOE for this facility, and we want to know, do we really need to make this sacrifice? If not, we don't want to.

As to the technologies that have been talked about, as to that need, it has to be seen as arising out of an understanding of what alternatives are available and which one is the best. I have in my testimony a fairly extensive look at some possible alternatives. It's all drawn from material taken from the UT studies, the State studies, and studies done by utilities. It's not that I'm trying to present a program, or that the task force is trying to present a program; we're not qualified to do that. But we can see that there is widespread acceptance of many of these alternatives for technology, primarily for at-reactor dry cask storage, with use of dual-purpose casks, efforts toward maximizing train shipments rather than truck shipments, use of dedicated train shipments from reactors directly to the repository. We get the picture as we look at this of the possibility of taking spent fuel out of the reactor, putting it into a final disposal canister, putting it into a cask that will be the storage cask, then taking that cask on a dedicated train directly to a repository, having been handled one time only, and placing the material in the canister into the repository, which eliminates so many handling steps, so many transportation steps, so many opportunities for worker exposure and public exposure that the simplicity of the idea is hard to back away from.

We have many questions regarding the program. Many of them have been raised here today, the program as presented by the Department of Energy. One of the things that concerns me was indicated by the NRC today, that the prime function of the MRS, the primary mechanical operation to take place there, dry rod consolidation, is a technology that has not even been demonstrated yet. And if it can't be demonstrated, the presumption from beforehand that it's going to be demonstrated is troublesome. It indicates an attitude that might not be healthy.

Let's look at it from the point of view that we're going to look at this alternative. We're going to examine it and decide then whether we'll use this alternative at the MRS or not rather than from the other way around, decide that we're going to use it and then proceed with justifying its use.

As members of the National Nuclear Waste Task Force growing out of these concerns, we've looked at the whole program and seen similar kinds of problems within the implementation of the Nuclear Waste Policy Act and the repository program, first round and second round. And out of these concerns we've joined with the National Nuclear Waste Task Force in calling for a four-point program.

First, bring a halt to DOE's flawed repository program. No money should be appropriated for siting activities, land acquisition, site characterization and/or area characterization in first or second round repository States.

Second, disapprove DOE's proposal to develop an MRS facility. MRS is not a suitable alternative to either the geologic repository program or at-reactor interim storage.

Third, establish an independent commission to review DOE's repository and MRS programs. Such a review would investigate the technical and institutional adequacy of these programs and make recommendations on how best to proceed.

Fourth, increase funding for research into and development of at-reactor waste management technologies, including dry storage technologies. Nuclear utilities must continue to rely on at-reactor storage while a sound waste disposal system is being developed.

Confidence in these programs must be restored. A gauge must be taken now before so much money is spent that the fact of the amount of money that has already been spent will become the program's own justification. We have to take another look now.

Thank you.

Senator BREAUX. Thank you.

Let me first congratulate the Mayor and the County Commissioner for appointing the task force. When you created the task force, you created it and charged it with evaluating the MRS proposal, and I think that was a very healthy thing to do. I think that when we talk about waste disposal, so many areas of the country create task forces to oppose the storage, indicating that they make up their minds very quickly that they don't want it, as opposed to evaluating whether the idea is a good idea or a bad idea. So I think the task force that the county put together is a very responsible group, and I think the results of the task force that we have before the committee here today are evidence of the fact that a lot of work went into it.

I was interested in some of your concerns, and one of the things that you talked about was compensation. I'd like you to tell the committee what type of compensation you are recommending. DOE says the MRS will create 600 or so new jobs. Those are new people moving to whatever county is located in; they are apparently going to be fairly well paid. They'll be paying taxes. You'll be getting payments in lieu of taxes—Mr. Freytag says almost $15 million in additional payments, whether that's a ball park figure or not.

So what I'm saying is that it looks like an awful lot of economic benefits coming. You talk about being compensated financially. I was wondering, what are we talking about? Any idea?

Mr. Pruett. Prior to Senator Johnston's S. 839, the DOE and the task force in their negotiations one with another in putting together some of the things that went into the final task force recommendation agreed rather early on that because of previous experiences with Federal facilities in Oak Ridge and in Roane and Anderson Counties, that there was a great deal of property, land, being used by the Federal Government for which we, the communities, weren't receiving any taxes, and we did get some payment in lieu of taxes which, incidentally, expired two years ago with a buy-out.

In this facility, we talked about early on—and had some acquiescence on the part of the Department of Energy—that this would be treated as though it were a private organization coming into town. Because of the valuable site that it picked up, the Clinch River Breeder site—which, incidentally, is a rather neat industrial site; it's on the river and has quite a few things going for it; the infrastructure is mostly installed, and it even has a railroad spur bed there but doesn't have the tracks—it was decided—and we asked for, and I think they agreed, that once the site was selected and the authorization for an MRS was to be given, we would start collecting taxes on that property as though it were a full-fledged facility, and that was I guess because the Clinch River Breeder itself occupied some 1,100 acres out there, or the site occupied some 1,100 acres. A lot of money was spent out there, but no remuneration to either Roane County or the City of Oak Ridge was forthcoming from the Government because the facility never got off the ground.

So in order to preclude that sort of a setting-aside of a very important piece of property, it was agreed that we would go for that as though it were a private industrial/commercial facility.

From the beginning we've looked at that site as a taxable entity on property tax, and our opinion about the value received as a piece of property within the community was on the order of $4 million. Our tax rate has been adjusted, then, and the proper application of the current tax rate still puts it somewhere in the neighborhood of $3 million, which would have a pretty significant effect on the property tax that we now have.

The Bennett-Johnston incentive bill came in, and they talked about $50 million on its authorization, $20 million during its construction, and $50 million during the operation of the facility. That gave us a little bit of concern because of the wording involved in Senator Johnston's bill. It says the affected communities would share one-third of the revenue, the funds coming in to the State of Tennessee. We have a little bit of a problem trying to identify what the "affected communities" might be. That probably could be, if the State wanted to impose such a definition, all of the communities that a truck or a train would pass through on its way into and out of Tennessee. Since we're the only community that has really done any work in looking at the MRS facility, it's not unreasonable to imagine that the State of Tennessee might decide to take care of the rest of the State first, although we've had some great conversations with the now-current Governor that that's not going to be the case.

Senator **Breaux**. What I'm trying to find out, you're saying that the DOE has agreed that the facility would be treated as if it were private for the purposes of taxation, so you would be able to levy property taxes on the facility. So what would you be looking to be compensated for? What would be lost economically to the county or to the City of Oak Ridge as a result of this facility being located there? If I wanted to add up some things and come up with a figure, what would I be adding up?

Mr. **Pruett**. The property tax on a fairly well-developed industrial site, one. Another program started or initiated by the Department of Energy which had a tendency to fall through—we need a couple of winners in the area. We've had quite a few losers lately, including the Clinch River Breeder Reactor, and that's kind of another story.

We're aware that there are going to be 600 or 700 jobs created, and we appreciate that, and don't think it hasn't been one of the considerations in our socio-economic thinking, and I'll let Bob Peelle talk to that. We've had the closing of the K-25 plant, which was the grandfather of the operations that are presently being handled somewhere else. Our people, our technicians developed the process which is now being conducted somewhere else.

So we're looking for the taxes on a piece of property that is taxable, and I guess that's basically the bottom line to your question.

Senator **Breaux**. Mr. Lowery, Tennessee has already had a tremendous amount of investment in the nuclear industry. You have nuclear powerplants; you have the Clinch River facilities. Some would make an argument that you already are a location that has a great deal of nuclear activity going on, therefore a well-regulated MRS, run by the top people in the business, can be safely done there, and it's not changing the socio-economic environment in that particular area. It fits, is what some would argue. What's your comment to that?

Mr. **Lowery**. Once again, to go back to the same point that I made earlier, whatever the impact on the local area, whatever the impact on the community, if this facility is not necessary, if these things can be done—if the functions of this facility can be done more cheaply, more safely and more efficiently with another system, as has been indicated by many people, then that question need not even be gotten to.

Senator **Breaux**. Do you recommend the continuation of the storage of nuclear waste in Tennessee at the utilities and at the reactor sites themselves?

Mr. **Lowery**. Yes, sir.

Senator **Breaux**. OK.

Mr. Peelle, you had another comment you wanted to make?

Mr. **Peelle**. I wanted to try to summarize the answer to that first question you were trying to get.

The law, as it stands now, does not give the DOE the authority to pay grants equal to taxes for an MRS. It does for a permanent repository, but not for an MRS.

Senator **Breaux**. But if they would treat it as a private facility, you would be able to tax it.

Mr. **Peelle**. But that requires congressional action. That's the first thing. But beyond that, in the blue report in front of you, the main item that you might call compensation, the main expense, would be a promise of taxes of equivalent size from the time of authorization. Normally you don't tax a private entity until the construction is well along or complete, so there would be some period of several years where we have asked—and the DOE says they're willing—to pay an amount of compensation equal to the taxes as if it were already built. And that's a significant amount of money. It would have to be negotiated in detail, but for Roane County's part at the present, if it's a $1 billion facility, it is postulated that that would amount to, at our current tax rate, about $6 million a year. However, if we were getting $6 million a year, the tax rate would go down, so this would effectively double the tax rate, something between $3 million and $6 million.

Senator **Breaux**. Mr. Freytag says it's going to be over in Morgan County anyway, so you might not have that problem.

Mr. **Freytag**. If they use good common sense, it will be.

Mr. **Peelle**. I'm sure that looks good from Mr. Freytag's point of view.

Mr. **Freytag**. We know of no reason why there can't be a site in Morgan County.

Senator **Breaux**. I think the way that you all have approached it, from an elected officials standpoint, is to be commended. I say that sincerely. I can't find an elected official who even wants, in most areas, to even consider studying solid waste disposal, let alone nuclear waste, and I think you've done it in a way to be commended. I can point to many examples in my own State where Federal officials, when you talk about any type of waste—waste that's generated right there—they don't want it, whether it's trash or garbage or tin cans or nuclear waste or toxic waste or you name it, they just don't want it. The fact remains, as so many people on this committee have said, we continue to generate the waste. It's a price of civilization, I guess. And we also have to be able to dispose of it adequately, so I think your suggestions are helpful.

Mr. Lowery, your position is not unnoticed, either. We thank you for it.

Thank you all for being here.

Mr. **Freytag**. Mr. Chairman?

Senator **Breaux**. Yes sir, Mr. Freytag?

Mr. **Freytag**. I'd like to have a comment.

I'd like to point out that Oak Ridge and Roane County, the county government and city government have been subsidized by the Federal Government and the taxpayers of this Nation since their inception, almost, and we'd like to get in on the gravy train just a little bit.

I want to make another correction. The figure that I gave—the Governor's Safe Growth Team spent 6 months with 45 staff professionals making a report, and they are the ones that I was quoting. They came up with a property tax based on the plant being worth $1 billion, and at Oak Ridge it would pay $8,467,454 in tax equivalency. In Roane County, it would pay $7,377,809 in tax equivalency, plus whatever accrued through sales tax and other matters. I wanted to correct that. And on the same basis, you could put this plant in Morgan County for $7 million.

I don't believe that you have a copy of our study that we presented to Mr. Rusche, and I'd like to leave you a copy of it.

Senator **Breaux**. Thank you very much. We will take a look at it.

We thank this panel, and this panel is now excused.

We'd like to take the final two witnesses that are on the list now, Prof. Ross Heath, who is Dean of the College of Ocean and Fishery Sciences from the University of Washington, and also Mr. Andrew Maier, who is President of Save our Mountains in Hinton, WV. We'd like to ask you folks to come up and we'll take your testimony at this time.

Mr. Heath, we have your testimony. If you would like to summarize it to the committee, we'd appreciate it.

STATEMENT OF G. ROSS HEATH, DEAN, COLLEGE OF OCEAN AND FISHERY SCIENCES, UNIVERSITY OF WASHINGTON, SEATTLE, WA, REPRESENTING THE SEABED ASSOCIATION, ACCOMPANIED BY JOHN E. KELLEY, CHAIRMAN, SEABED ASSOCIATION, AUSTIN, TX

Mr. **Heath**. Thank you, Mr. Chairman. My name is Ross Heath; I am a Professor of Oceanography and Dean of the College of Ocean and Fishery Sciences at the University of Washington. I am presenting testimony today on behalf of the Seabed Association, a nonprofit organization of scientists, universities and private research firms that is committed to scientific, engineering and policy research on seabed disposal of radioactive waste. This is a concept that forms an important complement to both MRS and land disposal.

The subseabed disposal concept involves the burial of high-level radioactive waste packages tens of meters beneath the deep ocean floor in areas where the geologic formations are stable and predictable. The waste would be isolated from the human environment by both man-made and natural barriers. The man-made barrier is the waste package, consisting of the waste form and canister; the primary natural barrier is the sediment, which chemically binds radionuclides while they decay to very low levels. Another natural barrier is the ocean water, which would dilute and disperse any radionuclides that escape from the sediment. The ocean would also constitute an effective barrier to accidental or intentional human intrusion. Potential subseabed disposal areas lie in international waters where the ocean is 4 to 6 kilometers—that's 2 to 4 miles—deep, and the bottom sediment consists of very fine-grained clays or carbonate-bearing sediments. These sediments form strong chemical bonds with the major radionuclides and, therefore, provide an effective long-term barrier to the release of radionuclides from the sediment into the ocean. Preliminary calculations indicate that subseabed disposal of high-level radioactive waste would pose risks to human health and the environment that are way below the Environmental Protection Agency standards for land repositories.

By way of background, U.S. research on subseabed disposal of high-level waste began in 1973 and ended abruptly last year, in 1986. The Subseabed Disposal Project was funded by the Department of Energy and managed by Sandia National Laboratories in Albuquerque, NM. More than 20 universities and research organizations were involved during the course of the research. By 1976, several other nations had begun research projects, and the Nuclear Energy Agency established the Seabed Working Group to coordinate the national projects. In 1985, 10 nations and the Commission of European Communities had active research projects with collective annual funding of approximately $18 million in U. S. dollars. The U.S. portion was $7.5 million. Last year, in 1986, DOE terminated the U.S. project "purely on the basis of near-term budget priorities." In response to the U.S. action, other nations decided to phase out their projects, and the Seabed Working Group began to prepare an interim status report on research results to date.

What's the rationale for this research? Congress recognized the need for research on alternative technologies in the Nuclear Waste Policy Act of 1982. Section 222 requires the Secretary of Energy to "continue and accelerate a program of research, development, and investigation of alternative means and technologies for the permanent disposal of high-level radioactive waste," and then goes on to say, "except that funding shall be made from amounts appropriated to the Secretary for purposes of carrying out this section." The final caveat in this language, although vague, was intended to mean that the Nuclear Waste Fund could not be used for work upon various waste disposal options.

Funds for subseabed disposal research, therefore, must be appropriated from general revenues, hence the "near-term budget priorities" that led to termination of subseabed research in 1986.

Congress also recognized the international dimensions of the waste problem and the dangerous link between commercial nuclear waste and nuclear weapons. Section 223 of the Nuclear Waste Policy Act commits the United States to "cooperate with and provide technical assistance to non-nuclear weapon states in the field of spent fuel storage and disposal." This cooperation is intended to prevent the diversion of commercial waste to military use and retard the proliferation of nuclear weapons. In 1985, in fact, eight non-nuclear weapon states were conducting research on subseabed disposal and were cooperating with the United States under the auspices of the Nuclear Energy Agency. In response to U.S. termination, however, these nations decided to discontinue their research programs.

Subseabed disposal is the only credible alternative to land-based repositories for the disposal of high-level radioactive waste. The United States and other nations are trying to develop land repositories, but all are encountering political opposition and technical problems. Failure or significant delays in the land repository programs will have profound consequences for the energy future of the United States and other nations. It is prudent, therefore, to keep the subseabed option open until adequate land disposal capacity is operational or until subseabed disposal is proved infeasible.

It is still not too late to recommence research on subseabed disposal in 1987 and arrive at a decision on whether it is a feasible option by 1994, which is the site selection year in the land repository program. The current one-year interruption will be costly in time and money, but considerably less expensive than trying to restart the program at a later date. The U.S. research team has not dispersed entirely to other projects and could be reassembled at the universities, private firms, and national laboratories. The international Seabed Working Group, which is scheduled to dissolve after preparing a status report this year, can still be salvaged if the United States makes a firm commitment to completing the research phase of the project and actively solicits cooperation from other nations. International cooperation in this and other large-scale projects can yield significant cost savings for the United States.

Termination of the subseabed disposal project for near-term budgetary reasons was ironic. Even the Office of Management and Budget recognized that the subseabed project was the inexpensive hedge against possible failure of the very costly land repository program. International cooperation enabled the United States to derive full benefit of the research, while paying less than half the total cost.

Budget considerations were not the only factor in the termination decision. The subseabed disposal project was perceived as competing with the land repository program. It is a fundamental business management principle that competing technologies cannot be adequately investigated within one research unit; the dominant technology garners all the resources to the exclusion of the alternatives. Subseabed research, therefore, should be removed from the Office of Civilian Radioactive Waste Management and managed by the Office of Energy Research within the Department of Energy. To maintain its research orientation and avoid premature commitment to development, the project should be conducted by a university-based consortium that would involve national laboratories, private firms and the public. This approach will enhance the credibility of the results and insulate the projects from the politics of the land program.

Recommencing U.S. research on subseabed disposal would have significant benefits. Benefits from one perspective, however, may be drawbacks from another, and the following items reflect various perspectives.

First is the issue of compliance with the Nuclear Waste Policy Act. Numerous lawsuits have been filed against the Department of Energy for failing to comply with the provisions of the act. Failure to comply with Section 222, which mandates continued research on alternative technologies, provides grounds for additional legal challenges.

On the issue of backup technology, the United States and other nations are trying to develop land repositories, but are encountering both political and technical problems. It is prudent to keep the subseabed option open until adequate land disposal capacity is operational or subseabed disposal is proved infeasible.

On the issue of nonproliferation, spent fuel which can be reprocessed into weapons-grade material is accumulating in nations that currently do not have nuclear weapons. These nations, particularly some of the less developed ones, lack the geologic formations or economic resources necessary to develop permanent repositories for their spent fuel. Section 223 of the Nuclear Waste Policy Act is aimed at this problem, and a subseabed repository could provide a politically acceptable solution.

On the issue of environmental protection, as demonstrated by the Chernobyl accident, improper disposal of high-level radioactive waste by any nation can have global environmental impacts. Consequently, the United States has an interest in developing environmentally-safe international repositories that all nations can use. The United States also needs to maintain the scientific and technical capability to assess other nations' waste disposal practices, including proposals other than those by the United States to implement subseabed disposal.

On science and technology issues, the United States leads the world in oceanographic research. In numerous peer reviews, seabed research has received high marks for rigorous state-of-the-art work on an interdisciplinary problem. Significant contributions, with attendant benefits to naval and other marine interests, have been made in basic oceanographic sciences. For example, in mathematical modeling methodology, scientists have succeeded both in simulating basic processes and in interfacing these simulations with parametric and probabilistic risk assessment models.

International cooperation by independent national research and development programs is a productive and cost-effective method for addressing large-scale problems. By maintaining a strong subseabed research program and cooperating with other nations' programs, the United States can derive full benefit at a fraction of the cost of the total research effort.

Looking at the longer-term issues of energy security, as hydrocarbons become scarce early in the next century, the need for nuclear power may increase. A subseabed repository could ensure that the United States and its allies have adequate disposal capacity.

Long-term storage, either at the reactors or at centralized facilities, is becoming a necessity. Active investigation of subseabed disposal increases our assurance that long-term, storage facilities will not, by default, become permanent repositories.

On the issue of costs, the total estimated cost of developing a subseabed repository system is $1.25 billion, which is less than 4 percent of the projected cost of the land repository program. The estimated cost of completing the research phase is $250 million. At that point, characterization of seabed sites in the Atlantic and Pacific Oceans will be completed, and there will be an adequate scientific basis for deciding whether to proceed with the development of subseabed disposal or to stop the project.

What should the U.S. position be? The United States should recommence research on subseabed disposal of high-level radioactive waste and encourage other nuclear and nonnuclear nations to cooperate in the research effort. U.S. research should be conducted by a university-based consortium involving national laboratories, private firms and the public. Seabed research should be managed by the Department of Energy's Office of Energy Research. The objective of U.S. research should be to determine the feasibility of the subseabed disposal concept by 1995. At that point, characterization of seabed sites in the Atlantic and Pacific Oceans will be completed, and there will be an adequate scientific basis for deciding whether to proceed with the development of subseabed disposal or to stop the project; and, if appropriate, oppose other nations that may choose to proceed with the concept.

Mr. HEATH. Mr. Chairman, the Seabed Association also has some specific comments on S. 1266, the High-Level Radioactive Waste Storage Act of 1987, which was discussed earlier by Senator Evans. We would like to leave these comments with you.

Senator BREAUX. Thank you, Professor Heath.

Mr. Maier.

STATEMENT OF ANDREW MAIER, PRESIDENT, SAVE OUR MOUNTAINS

Mr. MAIER. Thank you, Mr. Chairman. My name is Andrew Maier; I'm the President of Save our Mountains, a membership environmental organization based in Hinton, WV, and I'm deeply honored to be here.

In the past 3 months our group has been talking to West Virginians about the Nation's nuclear waste policy. We found that eight out of ten citizens of West Virginia feel, as we do, that the Nation's nuclear waste program is not on track. Of particular concern to West Virginians is the Department of Energy's proposal to build MRS, the Monitored Retrievable Storage facility, designed to store nuclear waste on a temporary basis.

The development of the MRS is, we believe, contrary to the intent of the Nuclear Waste Policy Act of 1982. The nuclear waste system authorized by this act does not include an MRS. The Department of Energy has attempted to redirect the emphasis of the act away from the development of a permanent repository and towards an expensive stopgap solution, the MRS. Our group feels that the national need for the MRS has not been established, and that the resources consumed in planning and building the MRS will reduce the momentum towards siting and building a permanent repository.

We are also concerned that the technology that would be used at the MRS for the consolidation of irradiated nuclear fuel has not been demonstrated to be safe and effective. Early attempts at such consolidation were described as "learning experiences" by experts, who also state that the potential exists for a criticality accident during the consolidation process. Dry rod consolidation technology has simply not been demonstrated. The increased transportation of irradiated fuel that the MRS would cause is also a source of grave concern.

We in West Virginia fear that the MRS will change its function over time and become a reprocessing facility. It is likely that the next generation of reprocessing technology, such as the Atomic Vapor Laser Isotope Separator being developed at the Lawrence Livermore Labs, will be collocated with the MRS. The idea that the MRS will become the Nation's de facto high-level nuclear waste repository does not seem at all far-fetched; indeed, we think that a great leap of faith is required to believe that the waste once stored at the MRS would ever be moved to a permanent repository.

Several studies have demonstrated the feasibility of storing nuclear waste at the reactors that generated it until such time as the permanent repository can be sited and built. This is the method that we feel makes the most sense.

We are also alarmed by the incentive payments that would be offered to the States by the Johnston bill. If the MRS is such a good idea, why are these payments needed? The overwhelming rejection of the MRS by the State of Tennessee should tell us a lot about the desirability of such a facility at the State level. In today's economic climate, States do not turn down industrial development projects without very good reasons. Senator Johnston's bill also provides for the abrogation of the rights of the citizens of the host State in a manner that we cannot believe is constitutional. The manner in which the Department of Energy rode roughshod over the State of Tennessee in its site selection process does not give West Virginians confidence in the DOE's ability to make decisions based on a dispassionate consideration of all available information.

The Department of Energy, having encountered almost unanimous opposition to its plans to build the MRS in Tennessee, may now be looking for an alternative location. A small group of citizens in West Virginia is trying to lure the MRS into the Mountain State. This group hopes to get the Department of Energy to further ignore the Nuclear Waste Policy Act and use political and economic considerations in selecting West Virginia as a point of least resistance. This is unacceptable.

In conclusion, we believe that the MRS is simply not needed to manage the Nation's high-level nuclear waste effectively. In a time of severe budget constraints, the Senate should view the MRS proposal as a good place to save more than $2 billion.

Thank you very much, and I'd be happy to answer any questions.

Senator **Breaux**. Thank you, Mr. Maier, and thank you, Professor Heath.

Let me ask Mr. Heath, with regard to the seabed proposal, who owns the seabeds? Who is going to give us permission to locate nuclear waste repositories in the seabeds?

Mr. **Heath**. As best we can determine now, that's an unresolved issue. It has been brought up at the London Dumping Convention, which is the international treaty which covers disposal of materials at sea, and they took the position that they would be the appropriate body to develop regulations and so forth if this were shown to be a feasible option. So right now, it's really nobody's turf, but somebody has agreed that they are the appropriate party.

Senator **Breaux**. You've got about 150 nations who all think that they would have to be involved in making any kind of an approval for using the seabeds as a site for the disposal of waste. Not only do you have a technological problem with that, you've got an incredible—underline incredible—legal problem with who determines who owns the seabed. You are familiar with the Law of the Sea negotiations that went on for decades, and still this country has not even signed it. The differences of opinion as to mining on the deep seabeds or even the acquisition of fishing rights on the seabeds is an incredibly unresolved issue.

Mr. **Heath**. I agree completely. I think it would be a mistake to underestimate the socio-political problems that we face, as I think it is a problem to underestimate them on national territory. But I think it's interesting to look at the history of the London Dumping Convention and to see that they have been able to adapt, as new technologies develop; and I think with this issue, as with any others, the development of a very sound technical base initially, before one tries to promote it or move ahead with it, would be essential. I think that by 1995 if the studies were concluded and showed that in fact it was environmentally safe and technically feasible, then I think you can present the treaty nations with a case, if it's appropriate, to proceed to the next stage.

Senator Breaux. Would the seabeds be considered a permanent site or a retrievable site?

Mr. Heath. Definitely a permanent site. Given today's state-of-the-art technology, one could retrieve material buried in the way that I described, but it would be extremely expensive.

Mr. Kelley. Mr. Chairman, can I respond to your institutional question about the London Convention briefly?

One of the things to remember is that the United States is not the only nation that has this problem. We're not the only nation having trouble siting a land-based repository, so we would assume that were this determined to be a feasible option in the mid-1990's, the United States would not alone be engaged in trying to resolve this policy issue, but would have a number of other countries working with it.

Senator Breaux. The problem with that is that about 80 percent of the countries that do not have nuclear waste would not be interested in allowing the 20 percent that do to use "their seabed" to deposit your waste.

Mr. Kelley. I understand that.

In regard to the LOS negotiation issue, though it is uncertain how the LOS—Law of the Sea negotiation and Law of the Sea treaty—is going to interact with the other operable international agreements, like the London Convention, there seems to be a good indication that conventions like the London Convention, which have historically had jurisdiction over certain activities such as the disposal of waste at sea, or in the case of regulation of fishing, or in the case of regulation of whaling, will continue to be the preeminent organizations, and the Law of the Sea organizations will not, in fact, preempt them. So in that sense, I think that the regulatory pathway is through the London Convention. The one example to illustrate the point that Dr. Heath made about resolving these issues is incineration at sea, where we were successful in a 5-year period in developing a framework for managing regulation at sea on an international scale. Domestically, however, we found that to be a more difficult problem.

Senator Breaux. Mr. Maier, I take it your position is to keep it on site and let them store it there as opposed to establishing some sort of a new monitored retrievable storage program?

Mr. Maier. Yes, Senator. We don't think the MRS is necessary. And if I may, I'd like to say something about the issue of the transportation safety and the casks that are so highly touted.

I studied this issue for more than 10 years before I moved to West Virginia. We worked on this issue in New Jersey. The National Transportation Safety Board has asked that those very spectacular demonstrations of trains crashing into casks, being hit by trucks, etc., not be considered as any more than demonstrations. They have said that they do not consider those to be in any way analogous to conditions in real accidents. The man who conducted those demonstrations, Dr. DuCharme of Sandia Labs in Albuquerque, told me personally that he is intensely upset that these films are being used all around the country to demonstrate the safety of all transportation casks. He says they simply don't do that. The Battelle Labs have determined that some of these casks can be breached in accidents at as little as 12.5 miles an hour. I think that the idea that we are totally protected from these tens of thousands of high-level nuclear waste transportation shipments is very dubious.

Senator **Breaux**. We thank all of our witnesses for being with us. This panel will be excused.

The committee has now completed, after 4 days of hearings, our review of the waste issue, the transportation issue, the Monitored Retrievable Storage issue, as well as the permanent repository issues with regard to the nuclear industry. Now the committee must get together and try and decide on a legislative approach to address all of the issues that we have finished our testimony on.

So with this hearing, the committee will now be adjourned until further call of the chair.

[Whereupon, at 1:05 p.m., the subcommittee was adjourned.]

[Statements submitted for the record follow:]

Senate Committee on Environment and Public Works
Subcommittee on Nuclear Regulation

Statement of Senator Daniel J. Evans
June 18, 1987

Mr. Chairman, I appreciate the opportunity to present my comments on the Department of Energy's proposal to develop and construct a monitored retrievable storage (MRS) facility at Oak Ridge, Tennessee, specifically, as well as the concept of MRS generally.

On May 18, 1986, the Administration selected the Hanford site in Washington State as one of three candidates for the nation's first geologic repository. At the same time, the Department of Energy announced that the second repository program mandated under the Nuclear Waste Policy Act of 1982 (NWPA), would be "indefinitely postponed". Since that time, it has become increasingly clear to Congress, the utilities and the public that our nuclear waste program stands in disarray.

There are abundant indications that the program has derailed.

1. A host of lawsuits have been filed in the Ninth Circuit Court of Appeals challenging the May 28th decisions.
2. In last year's Continuing Resolution, Congress made significant reductions in funding for the Department's nuclear waste program, and specifically prohibited exploratory drilling at any of the three candidate sites.
3. Representatives from the affected states have testified before this Subcommittee and other Congressional committees on the lack of substantive cooperation they have received in dealing with the Department.
4. The Department of Energy itself has asked Congress to approve substantial changes in the NWPA, including delaying the opening date of the first repository for five years, and putting off the development of the second repository program indefinitely.

While it is tempting to simply lay the responsibility for this situation at the doorstep of the Department of Energy given some of their past actions, I believe that many of the problems we have seen in the waste program since the NWPA was enacted are the result of deficiencies inherent in the Act itself. Although

I was not a member of the Senate when the NWPA was developed, I am aware of the intense pressure on Congress to fashion a technically sound and equitable plan for the disposal of the spent fuel currently being stored at the nation's commercial reactors around the country. Yet now, five years after passing this landmark legislation, it is high time that we consider a mid-course correction to a statute which established what many now consider to be an overly-optimistic schedule for the development and construction of a deep geologic repository.

In its proposal to Congress for the MRS at Oak Ridge, the Department identifies several of the benefits which an MRS facility provides -- increased efficiencies for transportation of the waste, packaging and consolidation of the spent fuel rods at the MRS, interim storage which allows for the decay of some highly radioactive but short-lived isotopes as well as reduction of the thermal load and elimination of the need to expand at-reactor spent fuel storage facilities. I join with the Department in proposing that MRS should be an integral part of our waste system, but I would argue that it is precisely the advantages identified by the Department which should lead Congress to expand the utilization of the MRS.

I have introduced legislation, S. 1266, which would authorize a fundamental mid-course correction of our nuclear waste program. The bill would direct the Department to develop and construct a system of regional MRS facilities to provide safe interim storage for spent fuel rods by the 1998 date mandated under DOE contracts with the utilities, while providing much-needed time to restore technical credibility to the repository, and consequently, build public confidence in the federal government's ability to dispose of spent fuel efficiently and safely.

Since coming to the Senate, I have devoted a great deal of time to studying the basic priorities set forth in the NWPA, and I have come to the conclusion that the approach taken in the Act is the reverse of what logic tells us is appropriate. We are rushing headlong to select a site and construct a permanent, deep underground disposal facility for radioactive waste, some elements of which lose their radioactivity at the rate of only fifty percent every 10,000 years. If we can store these materials safely above ground for a reasonable period of time, we will have the opportunity to spend more time doing the kind of careful and comprehensive research into the storage of nuclear wastes and potential repository sites required for the long-term disposal program to go forward again.

Let me describe the central provisions of the bill.

First, S. 1266 mandates an 11-year pause in the permanent repository program, placing it on hold until January 31, 1998. During this period, the Secretary of Interior, with the geologic expertise of the U.S. Geologic Survey at his disposal, would conduct a nationwide survey to identify the most promising potential sites for a permanent repository. This would be a truly nationwide survey, and would include all geologic media, all geographic areas of the country and would give no preference to federal sites -- all factors which biased the original selection process.

Second, the Secretary of Energy is authorized to develop and construct three MRS facilities in addition to the single MRS facilities contemplated under existing law. These MRS facilities would be geographically dispersed in four regions, with waste generated within the region to be stored at the regional MRS. This would reduce the potential for transportation-related problems and costs in moving the wastes from where they are created to storage facilities. Additionally, the bill provides all states with more authority than they now have to regulate the transportation of nuclear wastes within their borders.

Third, states which are selected to host an MRS would receive annual payments of $100 million for the long-term use of the land and environment once waste begins to be accepted at the MRS.

Finally, S. 1266 authorizes additional spending for research into alternatives to deep geologic storage such as subseabed disposal. Such research hasn't actively been carried out by the Department of Energy since passage of the Act and is now not being funded at all.

Mr. Chairman, I know that there are some who argue that it must only be expected that the governors and congressional delegation from any state which could potentially host a repository or MRS would come before you to wail and moan, and come up with hundreds of persuasive reasons why their state shouldn't be considered. Yet when I posed the question, "If on the basis of the strict scientific and technical criteria, your state was selected as the site for a repository, would you accept that designation?", I was pleased that representatives from my state answered simply, "Yes". But with the significant flaws inherent in the Act, and the serious management errors which have been made in implementing the nuclear waste program, scientific credibility has been lost and under current circumstances, any governor would realistically have no choice but to utilize his or her state veto authority under the NWPA.

The fundamental problem facing us today is that the nuclear waste program has lost its credibility, both scientific and political. At this point, I have real doubts whether a repository will ever be successfully developed without fundamental changes in our nuclear waste policy. The legislation I am proposing is not radically new, but utilizes a concept which has been discussed since the mid-1970's. The development of a series of MRS facilities provides a practical solution to our current problems; providing interim storage for spent fuel rods piling up at our nation's commercial reactors, and the time required to restore credibility and integrity to the repository program.

Mr. Chairman, the legislation I have introduced does not seek merely to delay the ultimate decision on disposing of our nuclear waste, but instead offers what I believe is a responsible and rational program for dealing with this issue head-on. I fully realize the complexities, both technical and political, of this issue, but I believe that during this historic 100th Congress, we must work together to set the nuclear waste program back on course. S. 1266 provides a workable blueprint for reaching that goal, and I look forward to working with each of you on this Subcommittee and hearing your comments and suggestions on this legislation and your proposals for repairing a program which has clearly broken down. It is an ambitious task we set for ourselves, but one which we cannot afford to ignore.

Mr. Chairman, I look forward to responding to any questions you and the members of the Subcommittee may have.

Albert Gore Jr.

Testimony submitted to the
Subcommittee on Nuclear Regulation of the
Senate Environment and Public Works Committee
Albert Gore Jr.
June 18, 1987

I would like to thank the Chairman for allowing me to submit testimony to the Committee on the important issue of our nuclear waste disposal program. This committee will be receiving testimony on the Department of Energy's proposal for a Monitored Retrievable Storage facility. The important questions to consider are: do we need an MRS? Would the addition of an MRS make our nuclear waste program safer or more cost efficient? Have we thoroughly explored alternatives, such as on-site storage until a permanent repository is ready?

The General Accounting Office recently released a report saying that DoE's proposal does not supply sufficient information to answer these questions. "DoE's proposal does not identify the most effective configuration of the authorized waste management system for the Congress to use as a basis for comparison in deciding if the benefits of the proposed MRS facility are worth its added cost to the waste program." In addition, "DoE has not fully developed important MRS cost elements, such as payments for state and local taxes and aid to mitigate MRS' impacts."

The Department of Energy must develop the information on a fully optimized non-MRS system. This information must be before Congress so that we may make a responsible decision. Today DoE is asking Congress to authorize an MRS. However, the question of "need" must be most thoroughly explored before an MRS is authorized or funded.

I will not accept a justification of the "need" of the MRS based on DOE's inability to meet the Act's deadlines for the completion of a permanent repository. This road leads to a de-facto final repository in Oak Ridge, Tennessee. Tennesseans are not reassured by the Department of Energy's statements that the capacity of the MRS would be limited and that the MRS would not open until construction authorization of the permanent repository.

I urge the committee to carefully consider the views of my good friend, the distinguished Governor from Tennessee. The people of Tennessee have not been arguing "not in my backyard," but rather "not in anyone's backyard."

I will do everything possible to stop DOE's efforts to turn the MRS into a quick-fix political solution to the real problem of final nuclear waste storage. The MRS is not the solution to the problems of the nuclear waste program. When the facts are presented to Congress, it will be apparent that the MRS is not needed nor is it beneficial to the nation's nuclear waste program.

STATEMENT OF THE HONORABLE MARILYN LLOYD
REPRESENTATIVE OF THE THIRD DISTRICT OF TENNESSEE
BEFORE THE SUBCOMMITTEE ON NUCLEAR REGULATION
SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
U.S. SENATE
JUNE 18, 1987

MR. CHAIRMAN AND MEMBERS OF THE COMMITTEE, I THANK YOU FOR THE OPPORTUNITY TO APPEAR BEFORE YOU TODAY TO STATE MY VIEWS AND THE VIEWS OF THE CONSTITUENTS OF MY DISTRICT, ON THE DEPARTMENT OF ENERGY'S PROPOSED MONITORED RETRIEVABLE STORAGE (MRS) FACILITY. AS THE AUTHOR OF THE FIRST REPORTED BILL WHICH LEAD TO THE NUCLEAR WASTE POLICY ACT OF 1982, I HOPE TO BE ABLE TO PROVIDE THE COMMITTEE WITH A MEMBER'S HISTORICAL AND PROGRAMMATIC PERSPECTIVE. I ALSO INTEND TO PRECISELY CONVEY TO YOU THE REACTION OF MY CONSTITUENTS IN THE THIRD DISTRICT OF TENNESSEE WHERE THE DOE PROPOSES TO LOCATE THE MRS FACILITY.

THE PROPOSED MRS FACILITY IS NOT IN THE BEST INTEREST OF THE NATION OR THE STATE OF TENNESSEE. AN MRS FACILITY WOULD LIKELY BE EXTREMELY EXPENSIVE, AND EVEN THE INITIATION OF SUCH A PROJECT WILL UNDERMINE THE DIVERSE POLITICAL SUPPORT FOR COMPLETING A FINAL REPOSITORY FOR THE PERMANENT DISPOSAL OF SPENT NUCLEAR FUEL. CONGRESS WANTS A REPOSITORY. THIS WAS THE PRIMARY GOAL OF THE NUCLEAR WASTE POLICY ACT OF 1982. THE COMMITTEE MUST NOT JEOPARDIZE THE POTENTIAL FOR ACHIEVING THIS GOAL BY AUTHORIZING THE MRS FACILITY. TO DO SO WILL DESTROY WHAT LITTLE POSSIBILITY REMAINS TO ACHIEVE AN OPERATING

REPOSITORY FOR SUCH PERMANENT DISPOSAL. WHAT POLITICAL SUPPORT FOR A REPOSITORY WILL REMAIN IF THE STATES WHICH HOST NUCLEAR POWER PLANTS NO LONGER HAVE TO BE CONCERNED ABOUT WHAT TO DO WITH THE SPENT FUEL THAT IS ACCUMULATING AT THE POWER PLANTS?

THE HIGH-LEVEL WASTE DISPOSAL PROGRAM HAS PUT THE NUCLEAR UTILITY RATEPAYERS OF THIS NATION ON AN EXPENSIVE TREADMILL. THIS TEMPORARY MRS FACILITY IS YET ANOTHER EXAMPLE OF UNNECESSARY EXPENDITURES WHICH ARE RIPPING OFF RATEPAYERS IN THIS HIGHLY CONTROVERSIAL 30 BILLION DOLLAR PLUS PROGRAM. A REASONABLE, SAFE, AND COST-EFFECTIVE PROGRAM FOR THE STORAGE OF SPENT NUCLEAR FUEL PRIOR TO ITS DISPOSAL IN A PERMANENT REPOSITORY, IS STORAGE AT THE POWER PLANT SITES USING EXPANDED WET STORAGE AND/OR THE NEWLY DEVELOPED DRY STORAGE TECHNOLOGY. THIS OPTION WOULD PRESERVE THE STRONG SUPPORT IN MOST STATES FOR DEVELOPING A PERMANENT REPOSITORY FOR OUR UNWANTED SPENT NUCLEAR FUEL.

ON MAY 7TH OF THIS YEAR, I INTRODUCED A BILL WITH SIX OTHER MEMBERS OF THE TENNESSEE DELEGATION AND A MEMBER FROM VIRGINIA WHICH REQUIRES THAT SPENT FUEL BE STORED AT THE POWER PLANT SITES AND THAT THE DEPARTMENT OF ENERGY PAY FOR SUCH STORAGE THROUGH THE NUCLEAR WASTE FUND. THE BILL, H.R. 2319, WAS REFERRED TO THIS SUBCOMMITTEE AND TO THE INTERIOR SUBCOMMITTEE ON ENERGY. I URGE YOU TO CONSIDER IT AS AN ALTERNATIVE TO THE MRS PROPOSAL.

ADDITIONALLY, THIS COMMITTEE SHOULD INSIST THAT THE DEPARTMENT OF ENERGY PROVIDE ADEQUATE DETAILS ON THE BEST ALTERNATIVE DISPOSAL

SYSTEM WITHOUT AN MRS FACILITY. I BELIEVE SUCH AN ANALYSIS WILL SHOW THAT THE COST OF THE MRS FACILITY WILL EXCEED THE COST OF CONTINUED STORAGE AT THE POWER PLANT SITES. AS YOU KNOW, THE GAO HAS RECENTLY CRITICIZED THE DEPARTMENT OF ENERGY'S MRS SUBMISSION TO THE CONGRESS FOR ITS INADEQUATE EXAMINATION OF THE NO-MRS OPTION. A PRIOR GAO REPORT ALSO CRITICIZED THE DEPARTMENT OF ENERGY'S COST ANLAYSIS AS TOO LOW AND INCOMPLETE.

FROM A MORE PERSONAL PERSPECTIVE, THE ENTIRE TENNESSEE DELEGATION IS OPPOSED TO THE MRS FACILITY BECAUSE OUR CONSTITUTENTS HAVE VOICED A RESOUNDING NO TO THIS FACILITY. ADDITIONALLY, THERE IS A BROAD PERCEPTION THAT THE MRS FACILITY WOULD BE A SIGNFICIANT BURDEN FOR THE STATE IN TERMS OF ATTRACTING A BROADER ECONOMIC BASE FOR FUTURE GROWTH IN THE STATE. THAT IS CERTAINLY TRUE IN THE OAK RIDGE/KNOXVILLE AREA WHICH HAS BEEN IDENTIFIED AS ONE OF THE MOST DESIRABLE LOCATIONS IN THE NATION.

ALTHOUGH I AM FIRMLY OPPOSED TO THE MRS FACILITY FOR THE REASONS I HAVE JUST STATED I RECOGNIZE THAT IT IS AT LEAST A POSSIBILITY THAT THE FACILITY MAY BE APPROVED OVER THE WISHES OF THE TENNESSEE DELEGATION. THEREFORE, IN THE EXTREME EVENT THAT THIS COMMITTEE CONSIDER AN MRS AUTHORIZATION BILL, I URGE YOU TO INCLUDE ALL OF THE PROVISIONS RECOMMENDED BY THE CLINCH RIVER MRS TASK FORCE ON OCTOBER 10, 1985. THESE RECOMMENDATIONS ARE AIMED AT MAKING THE DOE AND THE FACILITY AS GOOD A NEIGHBOR IN THE STATE OF TENNESSEE AS CAN BE REASONABLY EXPECTED. I KNOW THE COMMITTEE IS FAMILIAR WITH THIS REPORT AND THE DOE'S PROPOSAL THAT INCLUDES MOST OF THESE RECOMMENDATIONS. I FULLY STAND BEHIND THE TASK FORCE PROPOSALS AS MEETING THE MINIMUM NECESSARY CONDITIONS FOR A SAFE AND MINIMALLY DISRUPTIVE FACILITY AT THE OAK RIDGE SITE.

I THANK THE CHAIRMAN AND THE COMMITTEE.

STATEMENT OF

BEN C. RUSCHE
DIRECTOR
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
U.S. DEPARTMENT OF ENERGY

BEFORE THE

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
SUBCOMMITTEE ON NUCLEAR REGULATION
UNITED STATES SENATE

JUNE 18, 1987

Mr. Chairman and Members of the Subcommittee:

I appreciate the opportunity to appear before you today to discuss the Department of Energy's (DOE) proposal for Monitored Retrievable Storage (MRS).

In our proposal, we recommend that Congress:

- Approve the construction of an MRS facility at Clinch River near Oak Ridge, Tennessee;
- Limit the storage capacity at the MRS facility to 15,000 metric tons of spent fuel;
- Preclude waste acceptance by the MRS facility until a construction authorization for the first repository is received from the NRC;
- Direct DOE to implement measures responsive to the concerns and recommendations of the State and local governments; and
- Direct DOE to implement the program plan accompanying the proposal.

Before addressing several of the salient issues surrounding this proposal, I would like to provide relevant background information.

BACKGROUND

Section 141 of the Nuclear Waste Policy Act of 1982 (NWPA) directs DOE to complete a detailed study of the need for and feasibility of, and to submit to Congress a proposal for, the construction of one or more MRS facilities for spent nuclear fuel and high-level radioactive waste.

In addition, section 220 of the NWPA requires DOE to submit to Congress a report describing the research and development activities the Secretary considers necessary to develop the proposal required in section 141. The NWPA required that this report be submitted to Congress not later than 6 months after the date of enactment of the NWPA. In June 1983, DOE submitted this report to Congress, which concluded that the MRS proposal could be prepared using currently mature engineering and design practices without additional research and development.

In December 1984, DOE initiated efforts to examine MRS as an option for storage of spent fuel. DOE considered a variety of alternative system configurations and focused on three in detail. These configurations were:

(1) a deep geologic repository only, without an MRS facility;

(2) a repository with an integral MRS facility; and,

(3) a repository with a backup MRS facility.

DOE concluded that an MRS facility, as an integral part of the nuclear waste management system, would significantly improve system operations and the timely deployment of key systems functions. This approach is significantly different from the concept of the MRS as a backup facility. An MRS facility as part of an integrated system could perform spent fuel preparation and packaging functions at a central location before shipment to a repository for permanent disposal.

Attachment A represents the functions of the MRS in the waste disposal system. Performance of these functions at an MRS facility centrally located to the majority of the commercial generators of spent fuel could contribute significantly to overall systems efficiency and timeliness while reducing the total shipment miles. The east-central or southeastern part of the country is central to the majority of nuclear generators and, therefore, the area in which possible candidate sites could be considered.

At approximately the same time, DOE also began its process of screening to identify candidate sites for the proposed MRS facility. This process began with the knowledge of the one major difference between MRS facilities and deep, geologic repositories: MRS facilities, unlike deep, geologic repositories, would be surface facilities and would depend on engineered systems and equipment for the containment of the radioactive material. This makes the safety of such a facility largely independent of the natural characteristics of a site. Thus, suitable MRS sites could be found throughout the country.

Attachment B presents an artist's concept of the possible layout for an MRS facility, which would be a surface facility. The MRS facility, as proposed by the Department, would receive and prepare spent fuel for emplacement in a geologic repository. The principal waste preparation functions would be spent-fuel consolidation and loading into repository-specific canisters. Being uniform in size and free of surface contamination with radioactive material, these canisters would facilitate handling, shipping and further preparation at the repository. Consolidation would be performed by extracting the spent fuel rods from the hardware that holds them together in assemblies and rearranging them in a tighter array for greater efficiency in storage, handling, transportation and disposal. Besides the packaging functions of the MRS, the facility would also be capable of storing a limited amount (15,000 metric tons) of packaged spent fuel in a storage field.

The preferred storage concept is the sealed storage cask shown in Attachment C. The sealed storage cask is cylindrical with steel reinforced concrete walls, a concrete shield plug, a carbon steel cavity liner and a carbon steel lid. The outside diameters of the sealed storage cask designs are 12 feet except for the top 36 inches, which is stepped to 12.7 feet to provide a circumferential lifting surface. The exterior height of a sealed storage cask is 22 feet. The equipment and operations used in sealed storage cask loading/emplacement operations are illustrated in Attachment D.

Because suitable sites can be found throughout the country, DOE considered factors other than geology in screening these numerous possible sites:

(1) location to minimize total shipment miles;

(2) ability to judge the suitability of the site for development of a nuclear facility;

(3) sufficient available acreage;

(4) potential to compete with known land use, environmental or other public objectives; and,

(5) sites at which an MRS facility could be most successfully constructed.

In the first level of screening, DOE sought to identify the geographic region within which location of an MRS facility would minimize total shipment-miles for spent fuel transported through the MRS to a repository. DOE concluded that siting an MRS facility in the East Central region of the United States would lower total shipment-miles to and from the MRS facility to within 20% of the lowest achievable and was preferable under the numerous system logistics options considered by DOE.

Within the East Central region, DOE applied its next two screening factors, the ability to judge the suitability of the site for development of a nuclear facility and suitable acreage. DOE chose to consider those sites within the preferred region, which were either sites docketed with the Nuclear Regulatory Commission (NRC) for development of production and utilization facilities, or lands owned by DOE and used for nuclear activities. The rational for using this selection factor was the very high quality of publicly available data on the suitability of these sites for nuclear development.

Using searches of public literature, searches of the NRC public document room, and professional knowledge of individual sites, DOE identified 37 sites, 6 owned by DOE and 31 docketed with NRC within the preferred region. These 37 sites were located in 12 different states.

DOE next applied the requirement that the site have 1100 acres available on which to construct and operate an MRS. This factor reduced the number of potential sites to 11 sites in 6 states.

The 11 sites were further evaluated, drawing on materials available from public sources. DOE considered eight factors which affected a site's potential for development of an MRS facility:

(1) ease of regulatory compliance;

(2) existing environmental setting;

(3) geotechnical site considerations;

(4) socioeconomic setting;

(5) institutional and administrative structure of the state;

(6) local and regional transportation characteristics;

(7) access to physical infrastructure; and,

(8) capital cost of construction.

Based on this information, in April 1985, DOE issued two reports documenting its analyses and identified three candidate sites expected to be included in the proposal to Congress. The reports are entitled:

- The Need for and Feasibility of Monitored Retrievable Storage: A Preliminary Analysis; and
- Screening and Identification of Sites For a Proposed Monitored Retrievable Storage Facility.

The three sites identified are in Tennessee: The Clinch River Breeder Reactor site, owned by the Tennessee Valley Authority, as the preferred site; the DOE Oak Ridge Reservation; and the Hartsville Nuclear Plant site.

In December 1985, a draft proposal, including an environmental assessment and a program plan, was prepared for submittal to Congress early in 1986. Copies of the draft proposal were sent to the Environmental Protection Agency (EPA) and NRC for comment, as specified in the NWPA. Concurrently, copies were also provided to the State of Tennessee for comment.

TRANSMITTAL OF THE PROPOSAL

The Department had intended to submit the proposal in February 1986, but was enjoined from doing so by the U.S. District Court for the Middle District of Tennessee in litigation filed by the State of Tennessee. The Department subsequently appealed and received a favorable decision from the U.S. Court of Appeals for the Sixth Circuit overturning the injunction. That decision, in turn, was appealed to the U.S. Supreme Court by the State of Tennessee. The Supreme Court denied certiorari and the Department, having overcome these legal impediments, formally submitted the proposal to Congress on March 31, 1987.

The proposal consists of 3 volumes and, in accordance with the NWPA, it includes the proposal itself (Volume I); an environmental assessment (Volume 2) that examines the three alternative sites and six site-and-design combinations; and, a program plan (Volume 3) that includes plans for funding and for integrating the MRS facility into DOE's waste management system. Site-specific designs, specifications and cost estimates are included by reference in Volumes 2 and 3. Also provided are comments by NRC and EPA. Formal comments from the State of Tennessee, indicating former Governor Alexander's general opposition to the MRS, were received by DOE and were included. In addition, Governor McWherter's position on DOE's proposal, that reaffirms former Governor Alexander's opposition, was also included.

Included in the State of Tennessee comments are those from the Clinch River MRS Task Force of local officials and citizens from the City of Oak Ridge and from Roane County, Tennessee.

This Task Force endorsed the proposal for location of the MRS at the preferred site provided the proposal met certain conditions that the Department believes it has met.

Subsequent to the preparation of the proposal and receipt of the State of Tennessee comments, the Department received a report from officials within Morgan County, Tennessee, who had studied the prospect of locating the MRS in Morgan County and concluded that Morgan County should be the preferred site for the MRS. The Morgan County report and its recommendations and proposal to the Department are also provide with the MRS proposal for consideration by the Congress. Comprehensive environmental and other site-specific studies would be required to evaluate the Morgan County sites or any other sites not already considered by DOE.

Since the MRS proposal was prepared over a year ago, the Department has revised its estimate of when the first geologic repository can be operational from 1998 to 2003, as presented in the January 1987 draft Amendment to the June 1985 Mission Plan and as stated in the formal Mission Plan Amendment submitted to Congress on June 9, 1987.

The MRS will allow the Department to begin receiving waste by 1998. Regarding the draft Amendment, Volume 1 (The Proposal) and Volume 3 (The Program Plan) of the MRS proposal submission have been updated to reflect the impact of proposed programmatic and technical data base changes that have been developed by the Department since the proposal was originally prepared. In addition, a summary analysis of the effects of the above changes on Volume 2 (The Environmental Assessment) is included with that volume. The revised volumes and the summary analysis were also reviewed with EPA and NRC staff.

SAFETY DOES NOT APPEAR TO BE AN ISSUE

The MRS uses technology and techniques for remote handling of radioactive spent fuel which DOE and the nuclear industry all over the world have been using safely for many years. In our transmittal of the MRS proposal to Congress, we included comments by NRC, EPA and the State of Tennessee, also concluding that the facility can be safely constructed and operated.

NRC AND EPA COMMENTS

The NRC limited its comments to its role as a regulatory agency and include the following:

> "Siting - The preferred site identified by DOE for the MRS is the site of the former Clinch River Breeder Reactor Plant, which has already been shown to be a qualified site from the standpoint of public health and safety for a nuclear power plant. Moreover, based on present information, the staff knows of no information which would disqualify the alternate sites. DOE, however, has recognized the need for further investigations and evaluation of the designated site as related to the particular characteristics of the MRS design."
>
> "Design - The MRS conceptual design appears reasonable from the standpoint of public health and safety. Although an in-depth review would be required before the facility could be licensed, it appears from the conceptual design that each requirement in 10 CFR Part 72 can be met."

"Cask Certification - DOE must design a safe and reliable transport system, including durable transport equipment. You have indicated that transport casks developed under NWPA for transporting commercial spent fuel to a repository will be certified by NRC. Based on experience to date, spent fuel can be moved safely in NRC-certified casks."

"Demonstration of Consolidation - The consolidation of spent fuel needs to be adequately demonstrated to assure that this operation can be performed on the production-scale contemplated for the MRS. To date, a few spent fuel assemblies have been taken apart and the rods consolidated, and a significant number of fuel assemblies have been reconstituted (i.e., the rods have been removed and replaced within assemblies). In this sense, the consolidation process is feasible. You have indicated in the Design Verification Plan (Appendix C to the Program Plan) your intent to test and demonstrate disassembly/consolidation equipment, principally at the Idaho National Engineering Laboratory."

"Safeguards - The NRC staff's analysis of the MRS safeguards provisions at the conceptual design stage indicates that all NRC safeguards requirements can be met."

The Department sees nothing in the additional information or staff report detailing its evaluation to indicate that the MRS could not be built in a safe, environmentally sound and timely manner.

The EPA concurred "... that spent fuel and high-level wastes (HLW) can be safely and economically stored in dry storage facilities without significant degradation of the stored materials or risks to the public and the environment...." EPA also stated, "The EA and supporting documentation is adequate in explaining the need and advantages of the MRS as an integral part of the total nuclear waste management system."

Based on their review of the environmental assessment and the accompanying technical documentation, EPA concurred with DOE's recommendation to construct an MRS facility as an important element of the nuclear waste system. EPA further concluded that MRS construction could be accomplished within acceptable regulatory and environmental standards. This determination, however, is subject to EPA review and comment on the Environmental Impact Statement required for construction and licensing (and the subsequent applicable environmental permitting), which will be prepared under the National Environmental Policy Act if an MRS is approved by Congress.

STATE OF TENNESSEE COMMENTS

A few of former Governor Alexander's comments on the point of safety are:

" 'MRS' is a REPACKAGING PLANT -- The government has given the plant a ridiculous name (Monitored Retrievable Storage Facility) that confuses almost everyone, and nuclear power opponents have given it an undeserved reputation that scares almost everyone."

"THE REPACKING PLANT CAN BE OPERATED SAFELY -- That, of course, depends upon the U.S. Government's competence as a manager and regulator. But it is the same material being used everyday to make electricity. It will be carried in containers that have never broken, even when test-crashed at 100 miles per hour. The fuel cannot explode and cannot be made into a bomb. More than ninety percent of it will be carried by train, not on highways. The task force of citizens and experts from Oak Ridge and Roane County also conclude that it can be designed and operated safety."

THE CLINCH RIVER SITE

In the proposal to Congress, DOE identified the Clinch River Breeder Reactor site, owned by the Tennessee Valley Authority, as the preferred site. It has several particularly desirable features including: 1) Federal ownership and control by DOE; 2) particularly good transportation access (five miles to the nearest interstate highway and direct rail access); 3) site characteristics and current data judged by the NRC in 1983 as sufficient for granting a limited work authorization for the now cancelled breeder reactor; and 4) a technical community in the vicinity of the site which can provide experienced nuclear facility support functions.

Building the MRS on a technically acceptable site is of prime importance. Because NRC has already determined the Clinch River Breeder Reactor site to be acceptable for a nuclear power reactor, DOE believes there is very high confidence that NRC would find the site acceptable for the MRS, although there are many alternative sites for an MRS. Rather than dwelling on the many good technical merits of the Clinch River site, I would like to address further the non-technical but nonetheless important merits of the Oak Ridge - Roane County community as host for the MRS.

The Oak Ridge - Roane County community is perhaps a unique community in that it has a significant amount of background and experience in (1) working with DOE, (2) understanding and working with nuclear facilities, and (3) having a citizenship which is willing to volunteer its time and effort to work on issues of importance to the local community to ensure that its interests are protected.

The Clinch River MRS Task Force, which was a volunteer citizen group, did remarkable work in assessing the safety of the MRS and in developing conditions and suggested mitigation approaches which would make the MRS acceptable to the Oak Ridge - Roane County community. A measure of the success of this Task Force is the fact that both the Oak Ridge City Council and the Roane County Commission voted unanimously to accept the Task Force results, and would accept the MRS if DOE and the Congress met the conditions developed by the Task Force.

An analysis of the work of this citizen task force is contained in a paper prepared by E. Peelle of the Oak Ridge National Laboratory for the Waste Management '87 conference. I have attached that paper to my testimony (Attachment E)* for your information. I believe that it describes fairly a working relationship which could serve as a model for the waste program to use in all of our State, Tribal and local government relationships.

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*The attachment referred to has been retained in committee files.

COST OF THE MRS

The expenditures for the MRS program from the time of Congressional approval until the facility becomes operational are estimated at approximately $907 million, of which approximately $710 million would be for construction. The annual operating costs for the facility, which would employ about 600, would be approximately $73 million, not including financial assistance and tax-equivalence payments. The estimates are higher for the initial years of operation, when up to 1600 sealed storage casks must be fabricated, and lower in later years, when the MRS facility stops receiving spent fuel and is only shipping spent fuel in canisters to the repository. Decommissioning would cost approximately $83 million. These add up to a total development, construction, operation and decommissioning cost of about $3 billion.

The net incremental cost to the total system with an MRS is about $1.5 billion because of savings incurred at the repository and in the transportation system. The costs borne by the utility ratepayers would be offset by savings in at-reactor storage cost; these costs would be avoided because an MRS facility would allow DOE to accept spent fuel at an earlier time. Under certain circumstances, it is possible that the addition of an MRS facility could result in a cost saving to the overall system. For example, an MRS facility consistent with the draft Mission Plan Amendment is estimated to eliminate the need for additional storage capability at more than 15 reactor sites and could offset approximately 10,000 metric tons of at-reactor storage. This would result in a savings of as much as $1 billion at the reactor sites. The financial costs of adding an MRS facility are small in comparison with the benefits.

It is estimated that it will take 10 years from the time of Congressional approval to completion of construction of an MRS. Table 1 provides a timeline of the major milestones and program elements involved in the MRS deployment schedule.

Should Congress authorize an MRS facility, we are committed to seeking within 60 days to enter into a formal Consultation and Cooperation Agreement with the host State.

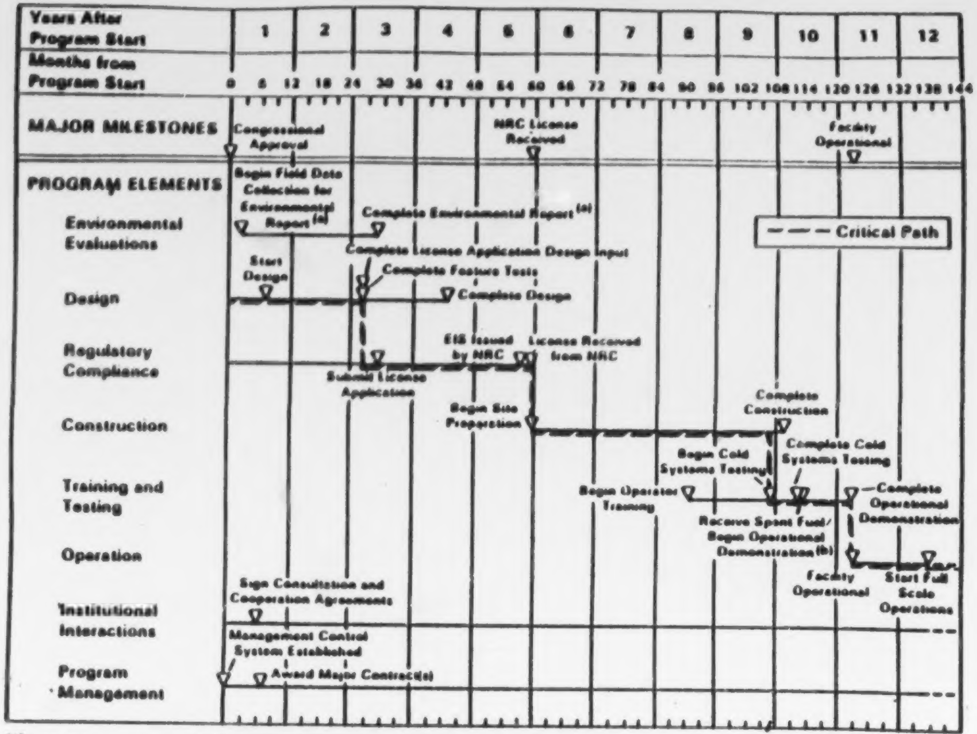
The FY 1988 funding estimate of $58 million for the MRS program assumes Congressional approval to proceed with activities that are critical to the deployment of an MRS facility.

COMPARING SYSTEMS WITH AND WITHOUT AN MRS

In considering whether to approve an MRS, it is reasonable to ask what it buys relative to a system without an MRS. I would like to address this question relative to several of the MRS benefits described in our proposal.

System Development:

One benefit that we consider to be particularly important, is how the MRS can contribute to the development of the entire waste management system. Inclusion of an MRS in the waste management system provides a stepwise approach to moving from the current state of experience to full scale operation of a disposal system including a repository. Those who emphasize a static comparison of already deployed MRS and no-MRS systems tend to overlook the importance of proceeding with an MRS as a step to a repository.



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[a] The precise nature of this document will be dependent on the provisions of any authorizing legislation.

[b] The shipment of spent fuel to the MRS facility is contingent upon receipt of a construction authorization for the first repository. The revised schedule for the first repository in the Draft Mission Plan Amendment contemplates receipt of such authorization by the first quarter of 1998.

TABLE 1 - MRS Deployment Schedule

At-Reactor Storage and Consolidation:

Without an MRS facility, up to 13,500 metric tons of new temporary storage capacity would be needed at about 45 reactors by the year 2003, when the repository would start operating. New temporary storage capacity will have to be provided at some reactor sites in any event, but to a far smaller degree with an MRS facility added to the system. The necessary incremental storage can be provided at the MRS facility more efficiently and at less cost, mainly because a single facility specifically designed and licensed for that purpose would be used instead of many separately designed and licensed independent installations.

The MRS facility could allow DOE to begin receiving waste for disposal in 1998, and the waste-acceptance rates of the waste-management system would start exceeding reactor-discharge rates 8 years earlier than would otherwise be possible.

Without an MRS, utilities will have to add significantly more new storage capacity. They are capable of doing this through such means as metal storage casks, concrete storage modules and rod consolidation. DOE has worked very hard to develop and demonstrate these technologies to help utilities "get by" until the Federal system begins operating to accept waste. Through cooperative programs with utilities, two dry storage facilities have been licensed by NRC.

Some have suggested, however, that because utilities can add storage capacity and can consolidate fuel, an MRS is not needed. The ability of utilities to add storage capacity is not an issue, and the MRS is not proposed with the primary objective of reducing the utility storage burden. Rather, reducing that burden is a very significant, but secondary, benefit associated with early implementation of the Federal disposal system that is permitted by the MRS and that makes the MRS all the more attractive.

On the consolidation question, I wish to point out that the results of consolidation at reactor sites and consolidation at an MRS are not comparable. This is shown in Attachment F. In order to create more storage capacity, some utilities are considering consolidating two assemblies into one square canister that will fit back into the original storage rack.

In contrast, rods from as many as twelve PWR or thirty BWR assemblies could be consolidated in round canisters at the MRS or the repository. The canisters would be sealed, free of surface contamination and specifically designed for the repository disposal package. Thus, consolidation and packaging operations at reactor sites should not be compared to those same operations at an MRS (or the repository). In addition, the packaging functions at the MRS facility (or the repository), in contrast to reactor storage basins, would be designed, built, licensed and operated specifically for this purpose -- optimizing the consolidation and packaging operation by minimizing the handling and movement of the spent fuel. Considering that several hundreds of thousands of assemblies will be consolidated and packaged, the DOE believes it is important that it be done with equipment and facilities dedicated to that objective, as opposed to it being an adjunct operation at over 100 different reactor sites not currently licensed for such a production operation.

The NWPA finds that "a national problem has been created by the accumulation of spent fuel from nuclear reactors" and that the "Federal Government has the responsibility to provide for the permanent disposal". Adding additional operator burdens and complexity at the reactor sites would be inconsistent with these findings which serve as a basis for the NWPA.

Foreign experience further reinforces the Department's belief that the further burdening of existing reactor activities is not warranted. For example, both West Germany and Sweden are minimizing the role of the operating reactors in spent fuel management and disposal, in order to allow the reactors to concentrate their efforts on the safe and efficient operation of the reactor facility.

Transportation:

Some improvements in the transportation system should be pursued -- with or without an MRS. For example, increasing cask capacities can reduce the number of shipments; this is being pursued independent of the MRS decision. Increasing the number of reactors that can ship by rail can also yield improvements; this is also is being pursued independent of the MRS.

Other suggested improvements include using reactor sites to marshal multi-cask shipments, performing inter-modal (truck to rail) transfers, use of multi-cask shipments for truck and rail, use of extra large casks (both truck and rail), and use of truck convoying techniques. The conditions under which these techniques are feasible, or even desirable, however, are highly uncertain.

In any event, their only effect on the MRS proposal is to potentially lessen, but not eliminate, some of the transportation system benefits offered by the MRS. Further, they would not help achieve early, route-specific planning efforts that can begin as soon as an MRS site is selected. These include detailed planning with States, Tribes and utilities on such matters as route designation, pre-notification, emergency response, and equipment procurements.

Without an MRS, there are considerable limits as to what can be achieved until a repository site is selected (in 1994, according to the draft Mission Plan Amendment). This illustrates further how an MRS can help resolve issues and make progress earlier, thereby contributing to overall system development.

Cost of an MRS

DOE has projected the MRS would add $1.5 billion, approximately 5%, to the costs for the Nuclear Waste Fund portion of the total waste system costs. The $1.5 billion will be offset somewhat by savings in at-reactor storage costs (which are separate from the Nuclear Waste Fund) resulting in utility savings of up to $1 billion. Even without those savings, however, we maintain that what you buy for this 5% is well worth the costs and that in the long run, the MRS may very well result in substantial cost savings that we just aren't able to quantify today.

INTERACTIONS WITH TENNESSEE

In April 1985, when DOE announced the identification of three candidate sites for study for the MRS proposal, DOE notified the Governor by telephone and letter.

At the time of the announcement, the Department published a draft Need & Feasibility Analysis for public comment and requested that the public provide any available environmental information regarding the candidate sites. A number of comment letters were received and responded to by the Department.

To support State participation in the MRS program activities and review of the proposal before Congress, a grant of $1.4 million was provided to the State of Tennessee in July 1985. The State in turn made monies available to the relevant local governments.

Copies of the designs and cost estimates were made available to the State as they were completed. The need and feasibility, and environmental analyses were developed in conjunction with review and comment from the State of Tennessee and the relevant local governments.

In response to a request from Tennessee officials, a preliminary version of the MRS environmental assessment was provided to Tennessee State and local officials, NRC, and EPA in November 1985. Feedback was received and accommodated into the three volume review copy of the proposal and supporting documents published in December 1985. The December 1985 review copy was used for the official review of EPA and NRC as required under the Act. The Department also requested, in recognition of their .pa concerns as the potential host state, that Tennessee review the documents.

Department officials have participated in 87 workshops, briefings and public meetings concerning or touching on the MRS program from April 1985 to March 1987. Twenty of these were with

State officials. Fifteen meetings were with local government officials. Three were travel briefings to acquaint State and local officials with similar government facilities in Idaho, Nevada, and New Mexico. The remainder of the meetings were held by various groups interested in the MRS.

The Clinch River MRS Task Force, a group chartered by the City of Oak Ridge and by Roane County, provided a detailed report to the Department in October 1985. This report and letters received from the State provided specific suggestions for improvements in documents organization, preparation, and local conditions for facility acceptability.

Many of the concerns expressed by the State and local governments are reflected in the final documents. For example, in direct response to State and local concerns, DOE incorporated the following into the MRS proposal: a 15,000 MTU limit on the amount of spent fuel to be stored at the MRS; that the repository receive a construction license prior to operation of the MRS; incorporation of the need and feasibility analysis into the environmental assessment; a request that Congress authorize mitigation payments for the MRS from start of construction, and, tax equivalency payments starting with operation of the facility.

CONCLUSION

I urge the Congress to authorize the MRS so that we can proceed with the development of the Nation's integrated waste disposal system in the most effective manner possible.

This concludes my remarks. I would be happy to address any questions you may have.

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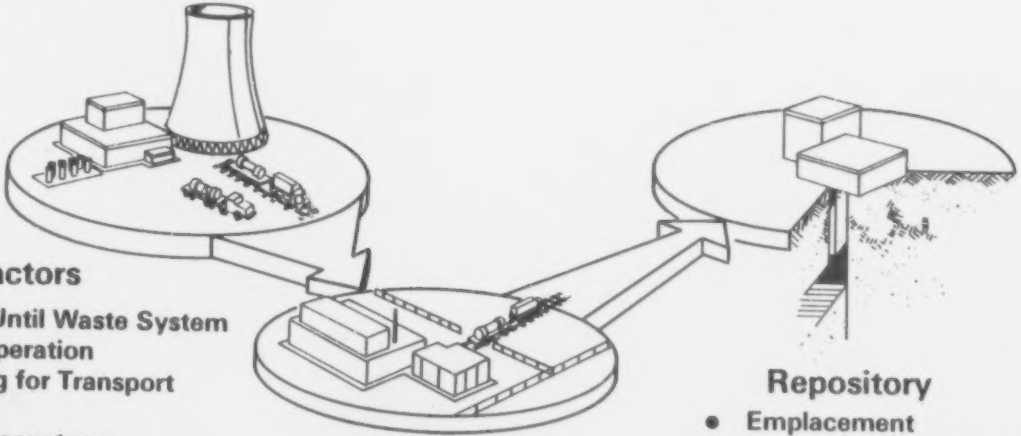
Distribution of Waste Management Functions in a System With an Integrated MRS Facility



Reactors

- Storage Until Waste System Begins Operation
- Packaging for Transport to MRS
- Federal Acceptance

MRS Facility

- Managing At-Reactor SF Acceptance
- Scheduling and Controlling Transport to MRS
- SF Receipt, Inspection and Accounting
- Consolidation, Packaging and Conditioning for Disposal
- Monitored, Retrievable Storage
- Controlling Transport to Repository
- Special Packaging, Repair and Testing

Repository

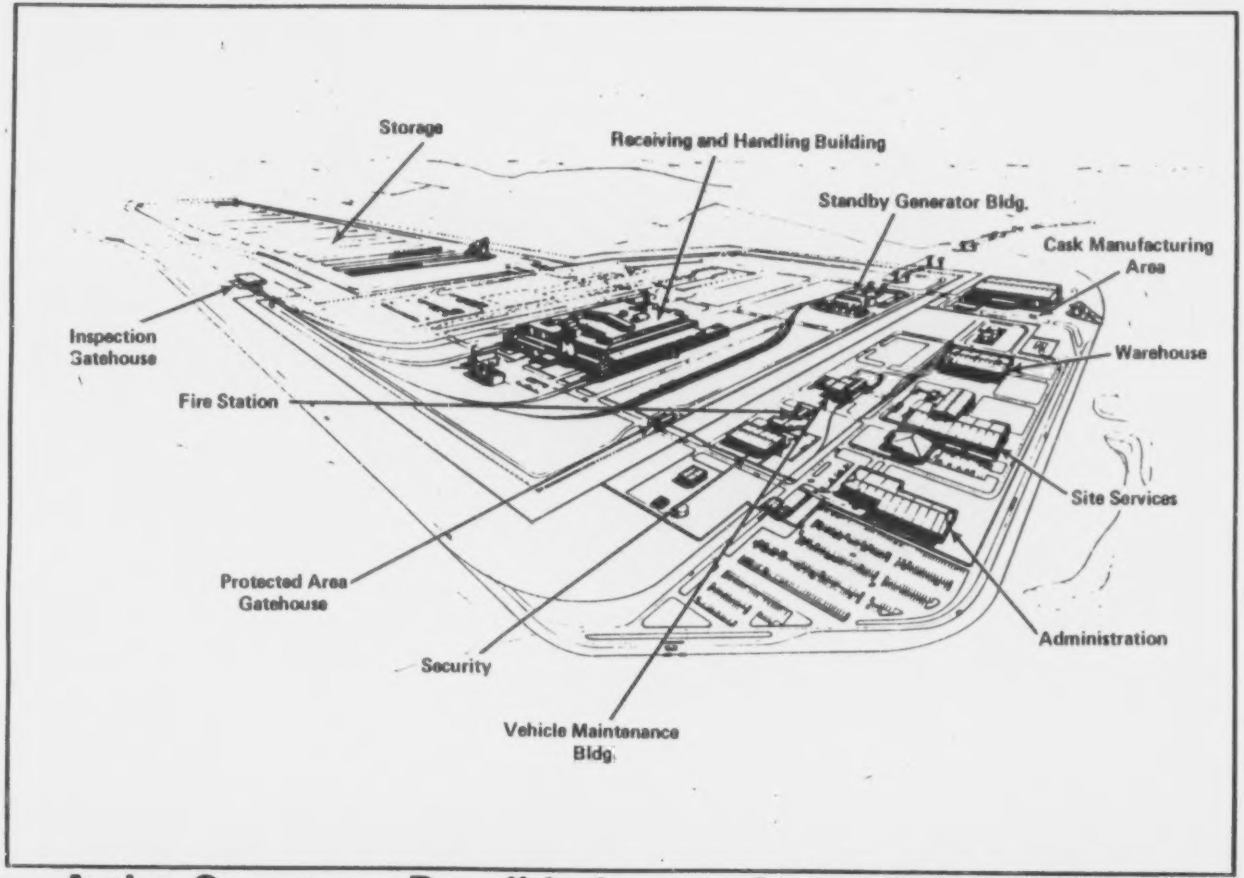
- Emplacement
- Long-Term Containment

Legend:

MRS - Monitored Retrievable Storage

SF - Spent Fuel

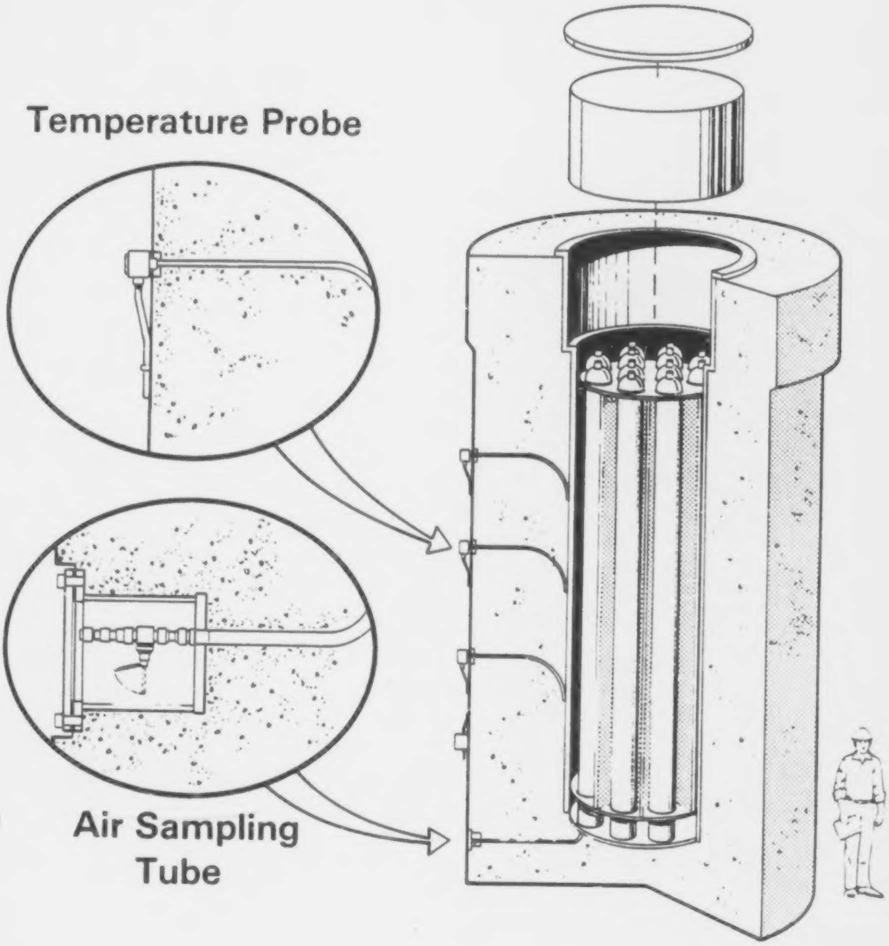
ATTACHMENT B


Storage
Receiving and Handling Building
Standby Generator Bldg.
Cask Manufacturing Area
Inspection Gatehouse
Warehouse
Fire Station
Site Services
Protected Area Gatehouse
Administration
Security
Vehicle Maintenance Bldg.

Artist Concept - Possible Layout for an MRS Facility

ATTACHMENT C

Sealed Storage Cask Monitoring


Temperature Probe
Air Sampling Tube

ATTACHMENT D

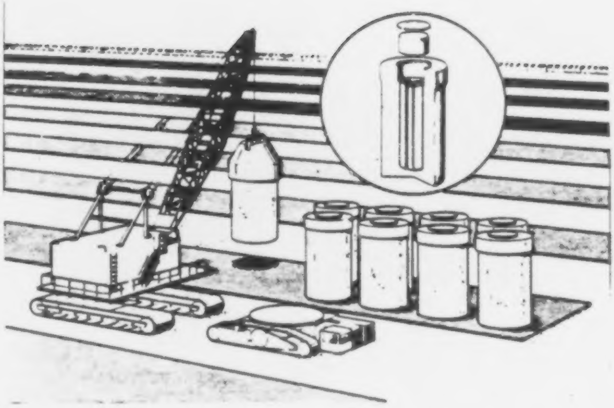


Illustration of Storage Facility
Operation and Emplacement for the
Sealed Storage Cask

United States General Accounting Office
Testimony

GAO

For Release
on Delivery
Expected at
9:30 a.m. EST
Thursday
June 18, 1987

DOE Should Provide More Information On Monitored Retrievable Storage

Statement of
Keith O. Fultz, Associate Director
Resources, Community, and Economic Development
Division

Before the
Subcommittee on Nuclear Regulation
Committee on Environment and Public Works
United States Senate

Mr. Chairman and Members of the Subcommittee:

We are pleased to be here today to discuss the Department of Energy's (DOE) proposal to construct and operate a monitored retrievable storage (MRS) facility. This facility would receive spent fuel from commercial nuclear power plants, prepare and package it for disposal, and store it temporarily before finally disposing of it in a mined, geologic repository. My testimony today is based on our report on the Department's proposal prepared at the request of the Subcommittee on Energy and Power, House Committee on Energy and Commerce, and the House Interior and Insular Affairs Committee.[1]

We were asked to assess whether DOE's proposal provides the Congress with enough information to make an informed decision on whether to authorize construction and operation of an MRS facility. We did not attempt to determine whether or not building and operating the proposed facility would be in the nation's best interest. Therefore, while we have views on the adequacy of DOE's MRS proposal, we do not have a position on whether the facility should be authorized.

According to DOE's proposal, the MRS would (1) improve development of the waste management system, (2) provide greater system flexibility and reliability, (3) facilitate repository operations, and (4) improve waste transportation. Also, because a repository is not now expected to be operating until 2003, DOE believes the facility is critical to its ability to accept waste for disposal in 1998 as required by its contracts with utilities. Although DOE sees these as benefits to the waste management system, it also recognizes that the facility is not essential to the system. In this regard, DOE has stated that nuclear wastes can be handled, stored, and disposed of safely without an MRS facility.

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[1] See Nuclear Waste: DOE Should Provide More Information on Monitored Retrievable Storage (GAO/RCED-87-92, June 1, 1987).

DOE estimates that the facility would add about $1.5 billion (in 1986 dollars) to the waste system. These costs would be paid by utilities from their contributions to the Nuclear Waste Fund. DOE also believes that without the facility utilities could incur additional storage costs of up to $1 billion.

I would now like to summarize the three basic findings from our evaluation of the MRS proposal. First, DOE's concept of monitored retrievable storage differs from the concept described in the Nuclear Waste Policy Act. Second, its proposal does not fully explore other alternatives to the MRS for improving the waste management system authorized in the act. Third, DOE has not estimated the full costs of an MRS. Therefore, the MRS proposal does not provide all of the information needed to determine whether improvements to the authorized waste system can provide many of the advantages of the MRS at less cost, or whether the benefits of the MRS facility outweigh its costs. Therefore, we recommended that DOE further evaluate alternatives to an MRS facility, use the evaluation results to identify the most effective and efficient configuration of the currently authorized waste system, and estimate all MRS-related costs.

In commenting on a draft of our report, DOE strongly disagreed with our conclusions and recommendations. DOE believes that it has provided adequate information on alternatives for improving the current waste system. DOE also stated that it has estimated all appropriate MRS costs. As I will discuss later, however, we do not agree with the department's position.

DIFFERING CONCEPTS FOR THE MRS

The Nuclear Waste Policy Act authorized DOE to develop a geologic repository for waste disposal, take title to spent fuel at commercial reactors, and transport it to the repository. The act also discusses an alternative option for managing nuclear wastes--monitored retrievable storage--encompassing long-term storage in a facility that would allow continuous monitoring and easy access. The act states that the Congress and the executive branch should consider a proposal for building one or more facilities for this purpose. It required DOE to study the need for and feasibility of monitored retrievable storage, and to submit to the Congress a proposal for constructing and operating an MRS facility.

In March 1987, DOE submitted its proposal recommending that an MRS facility be constructed near Oak Ridge, Tennessee and used for waste preparation, packaging, and temporary storage of spent fuel. The proposed facility would be capable of storing spent fuel for long periods, but under normal operations the fuel would be stored at the MRS only until DOE could ship it to a repository. In judging the merits of DOE's proposal, we believe that the Congress needs to recognize that DOE's proposal and the MRS concepts embodied in the act differ significantly. Although the act envisions that an MRS be used for long-term storage, DOE is proposing an MRS for handling and temporary storage purposes.

DOE'S ANALYSIS OF MRS ALTERNATIVES IS INCOMPLETE

In our view, for the Congress to make an informed MRS decision it needs information on the benefits and costs of improvements to the current waste system that is comparable to the information on the MRS in DOE's proposal documents. This information would provide a better basis for weighing the costs and benefits of the waste system with an MRS with an improved version of the current waste system. DOE's proposal identifies various alternatives for improving the current system, including measures to expand spent fuel storage capabilities at nuclear plant sites and at a repository site and to improve waste transportation.

DOE concluded that although these alternatives could improve the current system, none of them, either alone or in combination, could provide the benefits achievable with an MRS. In our judgment, however, DOE's conclusion is premature because (1) its assessment of individual alternatives was limited and (2) it did not include an analysis of the effects of combinations of these alternatives on the current waste system as a basis for its conclusion. For example, according to DOE, it did not conduct detailed analyses of some alternatives for improving the current waste system because extensive operating experience with them is lacking. In these cases, DOE's analyses were based primarily on existing information and engineering judgment. Consequently, DOE did not develop designs and plans for many of these potential improvements that were as detailed as those it developed for the proposed MRS facility. Therefore, DOE has not provided information on storage at reactors and transportation technologies that would allow a more thorough evaluation of alternatives for improving the current waste system.

In the area of storage at reactor sites, DOE's proposal does not contain information on (1) utilities' need for an MRS, (2) whether individual utilities would be willing or able to implement improvement alternatives in lieu of an MRS, or (3) how individual utility operations might be affected without the MRS facility. In addition, DOE has not determined if utilities have identified preferable alternatives to an MRS facility.

Likewise, in the area of alternative transportation improvements, DOE did not analyze the costs or determine the effects of each alternative on the current waste system because it has not designed these alternatives in detail. Although DOE's proposal describes the advantages and disadvantages of many potential transportation improvements, it does not compare the benefits and costs of each alternative with the potential benefits and costs of an MRS. For example, DOE did not quantify the number of shipments or miles that the spent fuel would travel in the current system, with these improvements in place, and then compare the results with a waste system containing an MRS.

Furthermore, DOE has evaluated other concepts for storing and transporting spent fuel under its waste system integration studies being carried out separately from the MRS program. Some of these concepts and technologies might provide improvements similar to those discussed in the MRS proposal. However, DOE did not incorporate the final results of these studies into its MRS proposal. Moreover, other studies and activities covering a wide range of spent fuel storage and transportation topics are underway within DOE. It is possible that these studies may contribute to a better understanding of potential improvements to the current waste system.

Finally, DOE did not determine the net effect that various combinations of transportation, reactor storage, and repository improvement alternatives might have on the current waste system, nor did it determine the most effective combinations of these improvements and how they would affect waste system costs. As I discussed earlier, DOE analyzed the various potential system improvements in terms of how each option, standing alone, might improve the current system. But, DOE'S proposal does not demonstrate the basis for it's judgment that no combination of improvements will provide benefits comparable to an MRS and that the benefits of the MRS are worth its additional cost.

In commenting on our report, DOE stated that more information on alternatives to the MRS is not needed for the Congress to make an informed decision on the MRS. As I have discussed, however, DOE's proposal does not satisfactorily demonstrate how much the waste system that the Congress authorized could be improved to enhance the efficient, effective, and safe management of nuclear wastes. In our view, the Congress needs to be aware of the consequences of not approving an MRS as well as the implications of authorizing the facility. The Congress needs information, therefore, on the safest, most effective and efficient configuration of the current waste system as a basis for comparison with DOE's proposal to integrate an MRS facility into the waste system. Consequently, we recommended in our report that DOE identify the best configuration of the current waste system and present the Congress with information on the benefits and costs of this system along with those of the MRS. To do this, DOE should collect reliable information from utilities on their need for an MRS and their willingness to implement reactor storage and transportation alternatives to the MRS. DOE should also include the results of completed and ongoing studies of spent fuel storage and transportation concepts.

Now I would like to discuss DOE's MRS cost estimates.

DOE HAS NOT FULLY DEVELOPED MRS COST ESTIMATES

DOE estimates in its proposal that an MRS facility would cost about $3.2 billion to build and operate for 31 years. Because the facility would permit cost reductions in other parts of the waste system, such as the repository, DOE estimates that the MRS would add about $1.5 billion to the cost of the waste disposal program. DOE stated in its proposal, however, that its estimates do not include cost elements such as: (1) site acquisition, (2) aid to affected localities for mitigating the impacts of constructing and operating the MRS facility, (3) grants equal to taxes, (4) consultation and cooperation agreements, and (5) federal, state, and local permitting and licensing fees.

In December 1985, DOE's Independent Cost Estimating staff also assessed the costs to construct and operate the MRS. (This is a separate group from the office that prepared the original estimates.) The group's study concluded that DOE may have underestimated the operating costs of the MRS by 10 to 15 percent. It also stated that DOE's waste office cost estimates did not include all costs of constructing and operating an MRS. The group indicated that several of these items could be of "substantial magnitude" and make the total MRS cost considerably higher than shown in program estimates. These items included the five cost elements listed above, as well as (1) royalties, (2) initial spare parts inventory, and (3) upgrading roads, railroads, and bridges for transport of heavy spent fuel shipping casks.

In our report, we recommended that DOE provide reasonable estimates of all costs associated with an MRS so that the Congress will have some basis for weighing the full costs and benefits of the facility and comparing them with the costs and benefits of the currently authorized waste system. Without a complete cost estimate, it will be difficult for the Congress to make an informed decision on whether the MRS is worth the price that utilities and, in turn, ratepayers are being asked to pay.

In commenting on our report, DOE stated that costs of federal land transfers are not known in advance since transfer circumstances vary widely. However, since DOE has identified proposed sites and the involved federal agencies, we believe it should also be able to provide a reasonable cost estimate. DOE also stated that costs associated with royalties, initial inventory of spare parts, permit and license fees, and consultation and cooperation agreements will not be significant and are included in a construction contingency factor. Although we did not independently estimate these potential costs, the potential exists, in view of DOE's independent cost estimating staff's assessment, that some of these items could be substantial.

DOE also commented that the MRS cost estimate includes costs for connecting the facility to highway and rail lines, and that it is not appropriate to include in the estimate additional costs for upgrading roads, railroads, and bridges for heavy transport. However, if it becomes necessary to upgrade roads and railroads leading to the facility, and if rail and highway authorities will not pay these additional costs, DOE might have to pay them regardless of whether they are included in the MRS facility cost estimate.

DOE also said it expects costs for taxes and impact assistance to be small, and that it did not include specific amounts in the proposal so they would not be interpreted as a lower limit for purposes of beginning negotiations with state and local governments. Further, DOE believes that the Congress, rather than DOE, should determine some of these costs as a matter of national policy and its judgment on the value of the MRS to the waste system. We are not convinced that payments to state and local governments for taxes and impact assistance will likely be small. On the contrary, because these costs are subject to negotiation they could be significant. Without some reasonable estimate for these elements, the Congress is presented an incomplete picture of what the MRS may ultimately cost.

We agree in principle, however, that the Congress should have some flexibility in determining any MRS-related payments to state and local governments. In addition, we understand why DOE may not wish to estimate state and local payment amounts at this time. Therefore, in lieu of specific estimates, DOE could estimate the effects of a range of potential state and local payments on total system costs until more exact costs can be established through congressional action or negotiations. This approach would provide the Congress with information on the potential effects of state and local payments on MRS cost estimates and, at the same time, give DOE negotiating flexibility.

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In closing, Mr. Chairman, I would like to reemphasize the key message of our report. The Congress has authorized DOE to develop and deploy a specific waste disposal system. It also directed DOE to study and prepare a proposal for long-term storage of spent fuel in one or more monitored retrievable storage facilities. However, DOE has proposed building and operating an MRS facility for waste handling and temporary storage at an additional cost to the waste system.

Although DOE believes that the benefits of the facility are clearly worth its added cost, the Congress must make the final judgment. To permit a fully informed decision, the Congress needs sufficient information to compare the proposed waste system with the best configuration of the current system. The Congress also needs to know the full cost of the proposal on the waste system. As I have just discussed, DOE's proposal does not provide all of this information. Finally, in evaluating the MRS proposal, the Congress should also recognize that the concepts embodied in it and in the Nuclear Waste Policy Act are different.

This concludes my statement, Mr. Chairman. I will be glad to respond to any questions that you and other members of the Subcommittee may have.

PREPARED TESTIMONY
SUBMITTED BY
UNITED STATES NUCLEAR REGULATORY COMMISSION

TO

SUBCOMMITTEE ON NUCLEAR REGULATION
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

CONCERNING
MONITORED RETRIEVABLE STORAGE

PRESENTED BY
HUGH L. THOMPSON, JR.
DIRECTOR
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS

SUBMITTED: JUNE 18, 1987

Monitored Retrievable Storage

Mr. Chairman and Members of the Subcommittee: I am pleased to have the opportunity to appear before you, to present testimony for the Nuclear Regulatory Commission (NRC), on the Department of Energy's (DOE) proposal for monitored retrievable storage (MRS).

The Commission is currently reviewing three legislative proposals, S. 839, S. 1141, and S. 1266, affecting monitored retrievable storage, and will provide comments for the record.

Under Section 141 of the Nuclear Waste Policy Act, which specified development of the MRS proposal, DOE was directed to consult with NRC in formulation of the proposal and to submit the Commission's comments with the proposal to Congress. The Act further specifies that MRS, if authorized by Congress, shall be subject to NRC licensing. I will first discuss the scope of our review and comments on the MRS proposal and then follow with our views on the role of MRS as an integrated part of the DOE waste management system.

During development of the MRS proposal, the NRC staff provided DOE with regulatory guidance, and developed and maintained familiarity with the MRS design concepts as developed by DOE. The Department formally submitted the proposal to the Commission for comment on December 23, 1985. Commission comments were provided to the Department on February 5, 1986. Those comments were forwarded to the Congress along with the proposal on March 31, 1987. I will just briefly mention our principal observations.

- Two of the three sites selected for consideration by the Department were evaluated and accepted by the Commission for the licensing of nuclear power plants.

- The facility design appears to be licensable under applicable NRC regulations.

- The spent fuel rod consolidation techniques contemplated for the MRS must be adequately demonstrated.

- As a procedural matter, it was recommended that DOE seek clarification of NEPA requirements in legislation authorizing MRS. I will come back to this point in a moment.

In examining the Department's proposal, NRC decided that its most useful role would be to focus its comments on subjects pertinent to its later regulatory responsibilities. In preparing our comments, we regarded the matter of need as primarily a business decision within the overall waste management system by which the Department intends to implement the NWPA. The proposal was therefore examined from the perspective of the licensability of the facility, if authorized by the Congress, specifically from the stand-point of its design adequacy to protect the public health and safety, and the environment.

Notwithstanding this view, we believe there are benefits, both operational and regulatory, to be gained by providing an MRS as part of an integrated high-level waste disposal system, as proposed by DOE. These benefits are worthy of consideration even though an MRS is not essential for the safe storage of pent fuel. Examples of operational benefits derived from an MRS integrated into the high-level waste disposal system include:

- flexibility for the DOE waste management system by decoupling the the repository from the reactors and reactor sites;
- simplification of the surface facility operations at the repository;
- a firmer base for utilities to plan for their fuel storage requirements;
- early planning and focus for the DOE transportation system.

In addition to the operational benefits, MRS presents certain regulatory benefits, particularly with respect to resource expenditures. Utilities continue to take steps to handle and store more spent fuel at one or more of their reactor sites. Two utilities already have been licensed for dry storage of spent fuel using two different designs. The MRS, as proposed, would permit:

- fewer designs for handling and storage to be reviewed, licensed and constructed at reactor sites;

- fewer number of reactor facilities engaged in spent fuel rod consolidation and packaging;

- fewer surveillance demands and more focused inspection;

- a greater degree of quality assurance with this simplicity.

The staff also examined alternatives to the MRS considered by DOE which seem to have neither the operational nor regulatory advantages of the MRS as currently contemplated. For example, the use of the MRS as a backup or near-term alternative to a repository would accrue fewer of the benefits and most of the costs when compared with the MRS as an integrated step in the system for high-level waste disposal. Should MRS not be authorized, all packaging and storage operations would then be carried out at reactor sites and the repository. While it is technically feasible to safely store all fuel at reactor sites until a repository is ready under its current schedule, additional regulatory and operational benefits identified in the previous paragraphs would not be realized.

With respect to the safety of the facility itself, we were able to perform a limited evaluation based on the conceptual design provided by the Department in its proposal. In performing this evaluation, the staff was guided by the General Design Criteria of 10 CFR Part 72, the rule under which an MRS would be licensed. As mentioned above, two licenses for the dry storage of spent fuel have already been issued. A third license was issued earlier pursuant to the same rule for the underwater storage of spent fuel. Further licensing actions are likely. The staff is currently making the minor modifications needed in Part 72 to be able to license the MRS in conformance with the Nuclear Waste Policy Act. We have already issued the modified version for public comment and expect to issue the revised rule sometime this Fall.

In our comments to the Department, we noted certain conceptual difficulties we had with respect to our responsibilities for implementing both the National Environmental Policy Act and the Nuclear Waste Policy Act. If MRS is authorized by Congress, the Nuclear Waste Policy Act specifies that the requirements of the National Environmental Policy Act will apply, except that any environmental impact statement prepared shall not be required to consider the need for the facility. However, the NWPA is silent concerning NEPA requirements for evaluation of alternative sites and cost-benefit analysis. This might create an anomalous situation if Congress had not only approved the MRS but also a particular site. Congress may wish to clarify its intent in legislation, if monitored retrievable storage is authorized. The resolution of these matters could affect the Commission's review schedule.

If authorized by Congress, DOE's schedule projects 30 months for completion of the MRS design and preparation of the license application for submission to the NRC. The applicable NRC regulation for licensing MRS is 10 CFR Part 72, which provides for a one-step licensing procedure covering both construction and operation. Thus, the license application must contain essentially final design level of detail. The DOE schedule projects 30 months for the licensing process, including time for public hearings. Except for the uncertainty associated with the hearing process, we see no reason why this schedule cannot be met. As may be surmised from our discussion earlier of the need for clarification of the environmental review process, some schedule slippage is possible if both agencies prepare environmental impact statements and analyses of alternative sites and cost-benefits are required.

As a final note, we ask that Congress carefully consider the provision contained in the MRS proposal that would prohibit operation of the MRS until the Commission has issued a construction authorization for the first permanent repository. DOE has clearly indicated that the reason for this linkage is to provide added assurance to state and local governments that the MRS will not become a "de facto" disposal site. The Commission supports the DOE position that the MRS should not be a substitute for a high-level waste repository. However, NRC's obligation in reviewing the license application for the repository and issuing the construction authorization is to public health and safety and will not include considerations related to the schedule for operation of the MRS. Nevertheless, the proposed linkage between the repository construction authorization and MRS operation, both projected for 1998 under DOE's revised schedule, could lead to at least an appearance of undesirable and unnecessary pressure to issue the repository construction authorization. For this reason and because there is no technical basis for the linkage, the NRC opposes this provision.

This concludes my prepared testimony and I will be pleased to respond to any questions that the Subcommittee members may have.

STATEMENT OF
NED R. MCWHERTER
GOVERNOR OF TENNESSEE

Presented to the
United States Senate
Committee on Environment and Public Works
Subcommittee on Nuclear Regulation

The Honorable John Breaux, Chairman

Washington, DC
June 18, 1987

The state of Tennessee rejects the proposal to develop a monitored retrievable storage facility at Oak Ridge, Tennessee. This is the position of both the Governor and the General Assembly. Tennessee has rejected the MRS proposal because the DOE has failed to demonstrate a need for this expensive project. The DOE proposal is not a viable solution to the problem of isolating nuclear waste from the human environment. Rather, it is a temporary solution inappropriate for waste materials that will remain dangerously radioactive for 10,000 years.

My "notice of disapproval" of the siting of an MRS in Tennessee (attached) was delivered to the Congress on May 28, 1987. The notice of disapproval of the General Assembly was submitted along with mine. These notices were submitted at this time out of an extreme abundance of caution given the significant legal uncertainty as to when such notice was timely. Our efforts to resolve this issue in federal court led to the conclusion that it was ultimately up to the Congress to determine the timeliness of any "notice of disapproval" which is issued.

The Nuclear Waste Policy Act provided the states with certain rights and with a chance for participation in structuring a national system for the final disposal of spent nuclear fuel. Tennessee has sought to protect and to exercise its rights under this law. Protecting our procedural rights has been a difficult task, due largely to the ambiguity of the language which was added to the Act to require a study of monitored retrievable storage. Nevertheless, Tennessee has participated by conducting a rigorous analysis of the MRS proposal. We have taken a constructive stance by proposing ways to improve the nuclear waste management system. We believe that a better system can be devised; one which results in less risk to the public and lower cost.

My comments address succinctly the perceived need for the MRS proposal, the proposal's cost, and the important ethical concerns in postponing the ultimate solution to this problem for another generation.

MRS IS NOT NEEDED

Much of the debate regarding the MRS proposal has focused upon the desired location of the facility. To some extent, the emotional atmosphere in which this debate has occurred has distracted attention from the more important question of whether the MRS is needed to ensure the success of the nuclear waste program. Studies undertaken in Tennessee and by the General Accounting Office in Washington raise serious questions about the prudence of this project.

The Tennessee studies indicate that the rod consolidation and storage functions proposed for the MRS can be accomplished effectively at the individual reactor sites. The DOE could encourage this alternative with two initiatives. The first would provide utilities with credits for fuel consolidation. The second would make available to utilities dual purpose casks suitable for storage at the reactors and adaptable for later transportation directly to the permanent geological repository.

The case for pursuing an alternative for on-site storage is strengthened by independent projections of the amount of spent fuel which nuclear utilities will generate. In fact, DOE recently adopted a number of the waste projection assumptions which the Tennessee study team used in 1985. Two years ago, DOE projections for spent fuel for the year 2000 were 20% higher than the Tennessee study. Today the difference is only 2 percent.

As waste volume projections drop, so do claims of avoided reactor storage costs attributable to MRS. DOE has testified that these savings would amount to $150 to $450 million assuming the first repository was developed on time. These anticipated savings, however, were based upon earlier waste volume projections that have since been discounted. The Congress should be aware that the actual cost savings likely will not exceed $100 million.

Substantially lower projections for spent fuel represent an extremely important issue in the debate over whether there exists a "crisis" of accumulated nuclear waste at our reactors. A number of reactors probably will decide to consolidate fuel rods at their sites to conserve available storage space. For some, this decision will come well before 1998, the most optimistic date for start-up of the first repository and the latest date projected for beginning MRS operations. Such early initiatives by the utilities are consistent with the DOE assumption that consolidated fuel is the desired waste form for repository emplacement. Congress should seek to encourage such beneficial actions by the utilities.

In recent years utilities and private support companies have been developing technology to consolidate fuel rods under water in the reactor storage pools. Some dry consolidation concepts also have been advanced. Several rod consolidation demonstrations have taken place. Others are planned by private firms anxious to prove that the process can be done safely. When the consolidated fuel is placed back into exiting storage pools, unit costs will be lower than for MRS fuel handling and storage.

For some reactors where further pool storage may not be appropriate, the fuel, either consolidated or not, can be kept at the reactor site in dry storage casks. The technology for such casks is nearing maturity. Such a cask already is licensed for use in West Germany. American utilities and the NRC are moving toward general licensing of dry storage casks at reactors without additional site-specific approvals.

Taken together, the advancing technologies in reactor consolidation and storage and diminished projections for the volume of spent fuel which will be generated suggest strongly that the primary functions for which MRS was conceived might well be handled routinely at reactors by the time an MRS could become operational. The motivation for such a policy would be nothing more than sound management by the utilities. With these options available to the utilities, the need for a temporary waste repository is no longer justifiable on grounds of cost or safety.

The task now should be to reinforce and reward the steps which have already been made toward sound management of America's nuclear waste. DOE could begin by developing a credit system for fuel consolidated at the reactors. Such a system of credits would recognize the benefits to the waste management system that result from the use of fewer casks and fewer shipments through the states. With this incentive, technology refinement for at-reactor consolidation could be moved forward at a quicker pace in response to DOE's efforts to organize and fund demonstrations.

DOE should accompany these efforts with a closer examination of cask designs that could serve both reactor storage and transportation functions. Such casks would reduce fuel handling and worker exposure. An appropriate family of dual purpose casks should be standardized by DOE for competitive manufacture.

In addition, DOE should pursue plans to move more of the spent fuel by rail than is currently proposed. The benefits of such a proposal would be substantial. With large rail casks fewer shipments would be necessary and costs and radiation exposure to the public could be reduced. To maximize use of this mode, DOE should become actively involved with the utilities in upgrading the cask handling and shipping capabilities of some of the reactors. DOE could help to coordinate shipping campaigns using dedicated trains. The non-standard shipping capabilities of the reactors should not be allowed to stand as a major constraint to creating an optimal waste management system for the nation. Tennessee's studies indicate that such improvements could reduce the number of cask-miles of shipping through the states down from 1.4 million annually with MRS, to 1.0 million with NO MRS and an improved transport plan.

MRS COSTS OVERSHADOW THE BENEFITS

Determining the cost of MRS to the Congress and to Tennessee has been extremely difficult. Life cycle system cost increases attributable to MRS climbed from $2.0 billion to $2.6 billion between December 1985 and April 1986. As the General Accounting Office has revealed, even the latter figure did not include a lengthy list of expensive items. One such item, likely compensation to the impacted state and community, could easily reach $1 billion.

Apart from costs associated with the MRS construction, operating cost estimates contained in the proposal recently sent to Congress have been reduced dramatically, and warrant critical examination. Based upon highly questionable assumptions, estimates of total system life cycle cost increases due to MRS have been recently reduced from $2.6 to $1.6 billion. The billion dollar reduction received insufficient documentation in the proposal, was not explained prior to the proposal being sent to Congress and should, therefore, be highly suspect.

The projected economic benefits appear to fall far short of justifying the enormous cost of the MRS. The most favorable scenario of benefits, which includes a repository in Washington, could produce only $650 million. Benefits ratios for all other scenarios are far lower. The question before the Congress is whether $3 billion should be appropriated for an MRS proposal of dubious economic benefit. An issue of this magnitude should be resolved on the basis of sound data that is not subject to whims of arbitrary change.

THE INTENT OF THE NUCLEAR WASTE POLICY ACT

We urge this committee to take a hard look at the need for this project and the costs involved. The debate should also include an assessment of the underlying congressional purpose of the Nuclear Waste Policy Act. The past two years have been characterized by an unnecessary sense of urgency regarding the development of an MRS. DOE's insistence in late 1985 that the proposal be acted upon immediately by the Congress is evidence of this generated sense of urgency. The MRS proposal was expedited at that time despite requests by Tennessee officials for adequate time to allow citizens and the state review team to study the proposal and develop comprehensive comments to be meaningfully incorporated into the proposal to Congress. Only litigation initiated by the state's Attorney General slowed the process temporarily. Yet almost two years after the litigation was initiated, the state's questions and concerns remain.

Other recent actions have served to undermine the congressional purpose of the Nuclear Waste Policy Act. The proposed five-year "extension" of the date for a first repository, and the proposed "postponement" of site-specific work on a second repository have created unwarranted pressure to proceed quickly with the MRS project. Recent emphasis on an unauthorized MRS and the proposed schedule "extension" to develop the authorized portions of the system constitute a distortion of the intent of the Nuclear Waste Policy Act.

Implementation of the Act seems to be in disarray. There are many different concepts on what can be done.

Some new ideas have recently been presented in the form of legislation which represent radical departures from the Nuclear Waste Policy Act. Those which seek extensive above-ground storage systems are most objectionable because of the shift of the final disposal burden to future generations.

Senate Bill 839 provides an incentive system which might be helpful in some respects, but this bill suffers from so many flaws that we must object. Incentives might be appropriate for a facility such as an MRS which could be sited in a wide range of geologic settings. Incentives may not be appropriate for siting a repository unless it can be assured that only candidates with technically adequate sites may apply.

Beyond the concept of incentives, S839 seeks to authorize an MRS without further examination of the need for such a facility and without regard to the costs of the project versus the benefits. Clearly, a determination of the need for such a project should proceed the offer of incentives for a state to host it.

S839 seeks to strip away the protections for the host states that were wisely included in the original Nuclear Waste Policy Act. It seems doubtful that the states will be willing to trade these safeguards for the monetary incentives offered.

A long-term solution for nuclear waste is an issue of the highest priority. The Congress recognized this when it enacted the Nuclear Waste Policy Act. The fundamental principle was then, and still should be, that solutions for the problem should not be deferred to another generation. At issue today is whether the proposal to store nuclear waste in a surface facility would serve only to delay final isolation of the waste from the human environment.

CONCLUSION

The state of Tennessee is deeply concerned about events of the past two years regarding implementation of the Nuclear Waste Policy Act. During this period there has been an ominous drift away from the Act's original intent, along with a false sense of urgency about the need for a temporary waste storage facility. This change is evident in the recently proposed Mission Plan Amendments which move MRS to the forefront to receive spent fuel at the same time a permanent solution is delayed. This DOE proposal is accompanied by statements from some utilities and some nuclear industry representatives calling for "unrestricted use" of the MRS. They seek to drop the schedule linkage to repository development proposed by DOE and call for lifting the cap on MRS storage capacity. Such actions point toward a mind-set that, in effect, would accept a "temporary" solution to a serious national problem with environmental implications for the next 10,000 years. The question before the Congress is whether we are prepared to take a stand now and reject the notion that we can pass this problem on to our children and grandchildren. Put simply, Tennessee wants no part of a de facto above-ground repository

The people of our state believe that the shortcomings of this proposal are not limited to the practical considerations of safety, cost, and technological feasibility. They also include issues that reach to the heart of the relationship between the states and the federal government. After two years of examining the proposal, the people of Tennessee and our state government are unconvinced that the proposed MRS facility is either economically or environmentally sound. Moreover, we do not believe that the process of designing and locating the facility has been conducted in good faith. We think the Congress intended that a potential MRS host state would have the same procedural rights as the states which are potential candidates for hosting a permanent repository site. Tennessee has not been afforded these rights.

On behalf of the people of Tennessee, I implore the Congress to heed the concerns expressed in this testimony. The impacts of your decisions upon the lives of the people in Tennessee could be profound and irrevocable. In the name of reason, and in the name of fairness, I urge that you not make this decision indifferently.

State of Tennessee

NED McWHERTER
GOVERNOR

May 27, 1987

Honorable John C. Stennis
President pro tempore of the
United States Senate
Room 205
Russell Senate Office Building
Washington, D.C. 20515

Dear Senator Stennis:

Please accept this letter as my formal notice of disapproval in accordance with 42 U.S.C. § 10161(h) and § 10136(b) of the Nuclear Waste Policy Act of 1982, P.L. 97-425, 42 U.S.C. §§ 10101, et seq., of the Secretary of the Department of Energy's designation of a site on the Clinch River of the Roane County portion of Oak Ridge, Tennessee, for construction of a Monitored Retrievable Storage facility. This site is the location of the once-proposed Clinch River Breeder Reactor. I am also giving notice of my disapproval of two alternative sites designated by the Secretary, one on the Oak Ridge Federal Reservation and the other on Federal Government land near Hartsville, Tennessee. The Secretary has designated these sites in plans submitted to Congress on or about March 30, 1987, in accordance with 42 U.S.C. § 10161.

The substantive reasons supporting this notice are set forth in a report prepared by the Environmental Policy Group of the Tennessee Department of Health and Environment. A copy of the report accompanies this notice. The report should be considered my formal statement under 42 U.S.C. § 10136(b)(2) explaining the reasons for which I am issuing this notice.

I am filing the notice now out of an extreme abundance of caution given the significant legal uncertainty as to when this notice is timely. I recognize that the Department of Energy strongly insists that a notice of disapproval from me is not timely until after Congress authorizes an MRS in Tennessee. I attempted to resolve this question in a lawsuit filed by the Tennessee Attorney General's Office on my behalf in the United States District Court for the District of

Honorable John C. Stennis
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Columbia. On May 26, 1987, the Court ruled that the question of timeliness of the notice of disapproval was not an appropriate issue for the Courts to resolve. (A copy of the Court's decision is attached hereto). The Court's opinion does, however, clearly indicate that it is ultimately up to the Congress of the United States to determine the timeliness of any notice of disapproval which I issue. In the meantime prior to any such determination, I am compelled to preserve what rights I may have under the law as Governor of Tennessee and file the notice at this time for such consideration as Congress deems appropriate.

Sincerely yours,

NED McWHERTER
Governor

NM:dmm
Enclosure

TESTIMONY OF
DON E. SCHAUFELBERGER,
PRESIDENT & CHIEF EXECUTIVE OFFICER
NEBRASKA PUBLIC POWER DISTRICT
ON BEHALF OF
EDISON ELECTRIC INSTITUTE
AMERICAN NUCLEAR ENERGY COUNCIL
UTILITY NUCLEAR WASTE MANAGEMENT GROUP
ELECTRIC UTILITY COMPANIES' NUCLEAR TRANSPORTATION GROUP
ATOMIC INDUSTRIAL FORUM
ON THE
MONITORED RETRIEVABLE STORAGE FACILITY
BEFORE THE
SUBCOMMITTEE ON NUCLEAR REGULATION
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE
JUNE 18, 1987

My name is Don E. Schaufelberger I am President and Chief Executive Office of the Nebraska Public Power District (NPPD), a public corporation and political subdivision of the State of Nebraska. NPPD owns and operates the Cooper Station, a 778 Mwe nuclear power plant near Brownville, Nebraska in operation since 1974. Currently our nuclear plant is 27% of our installed generating capacity. NPPD holds a contract with DOE, pursuant to the Nuclear Waste Policy Act of 1982 (NWPA), for disposal of our spent fuel. To date, NPPD has paid approximately $52 million into the Nuclear Waste Fund. I am a member of the American Committee on Radwaste Disposal, which is the electric utility senior level policy body on nuclear waste issues. It is made up of eight Chief Executive Officers representing investor-, public- and cooperatively-owned electric utilities. I am also first vice chairman of the Nebraska Power Association, member and past-chairman of the Board and Executive Committee of the Mid-Continent Area Power Pool and a member of the Board of the Nuclear Utility Management and Resources Council.

My testimony is on behalf of the Edison Electric Institute, American Nuclear Energy Council, Utility Nuclear Waste Management Group, Electric Utility Companies' Nuclear Transportation Group, and the Atomic Industrial Forum. In the best interests of NWPA implementation, we urge Congress to authorize, fund and not to restrict the use of the Monitored Retrievable Storage (MRS) facility.

The groups I am representing today are made up of (in some instances, among others) the electric utilities with nuclear energy programs who are currently the sole financial supporters of the DOE activities under the NWPA. The electric companies are responsible to the electricity consumer for the appropriate use of these funds. In addition to paying into the Nuclear Waste Fund, as required by the NWPA, electric utilities are, through participation in these groups, following the NWPA implementation, as well as providing assistance to the Federal Government, where appropriate.

MONITORED RETRIEVABLE STORAGE FACILITY

The nation requires development of a technically sound and publicly acceptable high-level radioactive waste disposal program for commercial use of nuclear energy to continue. In this regard, it is the industry's overriding goal to achieve efficient, effective and fair implementation of the NWPA leading to the successful operation of a national high-level radioactive waste disposal system as close to the NWPA schedule as possible. By authorizing, funding and not restricting the use of the MRS, Congress would be taking a large step towards this end.

Industry Support

The industry supports -- unequivocally -- the need for the MRS. Through its CEO committees and association boards of directors, the industry adopted a policy in support of the MRS: EEI: March 13, 1986, reaffirmed March 12, 1987; ANEC: December 19, 1986; NRECA: March 1986, reaffirmed in 1987. It is unfortunate that opponents of the MRS try to exploit the different opinions held by a few individuals within the industry in an attempt to show that industry support for the MRS is lacking. The General Accounting Office (GAO), in its May 1986 Fact Sheet, reported misleading survey results that seemed to show a lack of full industry support for the MRS. These misleading results, which are discussed more fully below, were the the product of a survey questionnaire that simply asked the wrong questions.

The Congress is faced with a choice between having a repository-only system or a system with an integrated MRS and repositories. There is no question that the high-level radioactive waste disposal system can be designed and operated with only the repository. However, the risks associated with that path seem to us unreasonably high. The repository-only approach would require all the parts of the disposal system to be in place and operate together for the first time when DOE begins receiving spent fuel at the repository some sixteen years from now. This is an unrealistic expectation that, in our opinion, would be prone to failure and further delays. We strongly believe that the MRS, a separate facility that would be integrated into the disposal system and operated earlier, would provide the necessary experience in facility licensing, large-scale spent fuel handling, transportation, institutional relations, etc. that is needed for the repository to be a success. It is this strategic and critical role of the MRS that most critics, including the GAO in its June 1987 report, have failed to recognize.

MRS Advantages

As an integral part of the high-level radioactive waste disposal system, the MRS will perform functions essential to the disposal of spent fuel. It will provide vitally needed flexibility in the planning, design, construction and operation of the disposal system, thereby lessening the effects of the uncertainties that DOE faces. Furthermore, the NWPA implementation experience thus far has demonstrated that progress is, indeed, a precious commodity. The MRS is an important item that will make progress towards the operation of the disposal system earlier than would be the case with a repository-only system. Having the MRS in the disposal system would help bring the first repository into operation sooner by allowing a more flexible and efficient repository design and licensing process. The nuclear industry supports the development of an MRS as an integral part of the repository program. However, the MRS is not acceptable for long term disposal, which must be accomplished in a deep underground repository. DOE has raised the importance of the MRS by planning to use the facility to live up to its statutory and contractual obligation to accept spent fuel by January 31, 1998. If Congress accepts this NWPA implementation change, then Congress must authorize, fund and not restrict the use of the MRS.

The MRS would be a vital part of the nation's high-level radioactive waste disposal system. It would provide a location for preparing spent fuel for disposal as well as serve as a transportation hub for the movement of spent fuel from reactors to the repository. The MRS would consolidate fuel (if required), package it for disposal, which are functions that must, in any event, be part of the above ground element of a repository system. It would also provide a limited amount of storage. These are important functions necessary for the disposal of spent fuel, however, there are stronger reasons for including an MRS as part of the high-level radioactive waste disposal system: flexibility and progress.

The NWPA implementation is unprecedented in its scope and time period. Given the nature of the NWPA implementation, it is prudent management to provide a disposal system with design and operational flexibility. It is also prudent to provide a method for relatively early progress in disposal system development and operation. The MRS would provide these advantages.

Including the MRS would allow the separation in engineering, design, construction and licensing for the two parts of the current repository design (surface and subsurface facilities). This would allow DOE to concentrate its resources and use them in a more efficient and effective manner. It would be easier for DOE to run these projects if the two large pieces could be separated.

The separation would allow system planning to take place earlier than would be possible with the repository-only system. This would be especially important in the licensing and institutional relationships of the disposal system. This includes transportation planning. With the location of the MRS set, from-reactor transportation planning can begin without having to wait for finalization of the repository location. All parties would have earlier experience in these matters, because the MRS would require activities similar to that for the repository.

The separation would also provide a more flexible operating system. An MRS would provide the disposal system with the ability to handle more efficiently spent fuel as it travels from the reactors to the repository. For example, the from-reactor transportation system can operate independently of the repository loading requirements so there would be no need to coordinate spent fuel operations at over 100 reactors with operations at one or two repositories.

The MRS will have a positive effect on the overall performance of the high-level radioactive waste transportation system. Furthermore, based on world-wide experience over more than three decades and the many analyses that have been made of spent fuel transportation radiological risks, these are so low that any change in the transportation pattern with an MRS in place will not result in a statistically significant change insofar as any particular state or region is concerned. With respect to the other transportation impacts to a state or region resulting from spent fuel transportation to a repository or to the MRS, the DOE's analyses show these to be very small as well. Also, DOE is committed in its Transportation Institutional and Business Plans and in its MRS Proposal to mitigate transportation impacts where feasible. An important advantage of authorizing the MRS is that DOE and the affected states can make early decisions as to the best means to deal with these impacts and how most effectively to utilize existing capabilities of state and federal agencies.

Lastly, including the MRS would also provide needed progress towards the disposal of spent fuel at a date earlier than would be possible with a repository-only system. Development and licensing of the above ground facilities would not be tied to the progress of below ground development. And, of course, DOE now plans to begin, if Congress approves, receiving and packaging spent fuel before the repository is operational to live up to its statutory and contractual 1998 obligation.

Taking all of these purposes and benefits together, including the MRS in the high-level radioactive waste disposal system makes a great deal of sense and DOE would, without the facility, very likely violate the 1998 obligation.

Foreign Disposal Programs

There has been much recent discussion of the high-level radioactive waste disposal programs in several European countries. It is important to recognize that everyone of these programs, especially in France, West Germany and Sweden, has the disposal of high-level radioactive waste in deep geologic repositories as its ultimate goal. Their schedules differ from ours and the specific activities they will pursue are somewhat different, because of their different regulatory and institutional structures. Nonetheless, the ultimate goal - disposal in deep geologic repositories - is the same.

Most countries appear to be making progress towards ultimate disposal by the use of a central collection, preparation and interim storage facility. France, West Germany and Sweden plan eventually to dispose of their nuclear waste in deep underground geologic repositories. However, each have planned central interim facilities for spent fuel or high-level waste prior to ultimate disposal. In France, spent fuel is placed in water pools at the reprocessing plant site, subsequently reprocessed and the separated high-level waste solidified by glassification into waste packages for disposal at a later date. The same general approach is planned for West Germany except the spent fuel is placed in dry storage casks at a central facility prior to reprocessing. In Sweden, the quantity of spent fuel is limited to their specific nuclear program and it is being placed in a central water pool facility for an extended period before being packaged for placement in a geologic repository without reprocessing. The US can also begin to make progress towards disposal if Congress authorizes, funds and does not restrict the use of the MRS facility.

DOE's MRS Proposal

DOE's March 1987 Proposal to Congress for the MRS is generally acceptable to us and we strongly urge Congress to authorize and fund the facility. We recommend however, that Congress not restrict the start-up of the MRS, as DOE suggests, by linking it to the receipt of a first repository construction authorization.

The Proposal also recommends that Congress authorize DOE to provide substantial benefits to the MRS host State and local communities. These include financial assistance payments, payments-equal-to taxes, mitigation assistance payments for effects on property value and local economic development, and use of local contractors and suppliers to the maximum extent possible, including providing training programs to help develop local capabilities and selecting contractors that would bring diversification to the area. In addition, if Congress approves DOE's recommendation for siting the MRS on the site of the former Clinch River Breeder Reactor, DOE proposes to release other DOE land to the local community in compensation for removing the CRBR site for consideration for industrial development.

These provisions are appropriate steps towards the needed incentives for assisting NWPA implementation. The recently proposed S. 839, Nuclear Waste Policy Act Amendments Act of 1987, would offer much greater incentives to a State or Indian Tribe for agreeing to host the MRS. Such additional incentives appear to be reasonable and it may be appropriate to provide an expanded incentives package for the MRS facility. However, it is most important that developing this broader MRS incentives program not be permitted to be used as a justification, or an additional opportunity for, further delay in NWPA implementation, including MRS authorization. We recommend that the MRS incentives similar to those contained in S. 839 be incorporated in the MRS authorizing legislation.

The industry believes that the MRS should be located on a readily licenseable site. And further, the site should, to the extent possible given other siting considerations, minimize the transportation distances from the majority of the Nation's reactors. The MRS authorization should include specific and complete direction for siting the MRS facility. The DOE proposed Clinch River site in the Roane County portion of Oak Ridge, Tennessee should be designated as the authorized site. However, provision should also be made for a state or Indian Tribe to come forward within, say, ninety days, to offer an alternate site. If DOE determines, within one year of the date of the offer, that the alternate site is preferred over the Clinch River site, then the alternate site is the authorized site. However, if such a determination is not made, the Clinch River site remains authorized. Furthermore, during this fifteen month period following enactment of the MRS authorization, DOE should be permitted to continue working on the MRS project.

The MRS Proposal describes a facility and technology for packaging spent fuel in high quality, repository ready containers. We believe that DOE should develop a flexible MRS approach. Future developments in overall disposal system design may alter the functions performed at the MRS. To make maximum use of the flexibility provided by the MRS, DOE needs to optimize the overall disposal system, including the MRS.

One aspect of DOE's MRS strategy that we cannot agree with is the linkage between MRS operation and receipt of the NRC construction authorization for the first repository. DOE suggests that such linkage is needed to allay concerns that the MRS facility could become a substitute for a permanent repository. The linkage concept is inconsistent with the purpose of the MRS as described in the Draft Mission Plan Amendment. The effect of the proposed linkage would be to raise a significant question whether DOE will be able to meet its statutory and contractual commitment to begin to accept spent fuel in January 1998. The Draft Amendment shows that the construction authorization is scheduled for the first quarter of 1998. That schedule is an optimistic one and assumes a relatively brief licensing process and no litigation-imposed delays. If the construction authorization process does not meet DOE's thirty-six month target or if other contingencies should occur, MRS operation would be delayed and the January 1998 commitment will be violated.

HIGH-LEVEL RADIOACTIVE WASTE DISPOSAL

The industry is extremely concerned about the current state of affairs surrounding the NWPA implementation. Electric utilities with nuclear energy programs have collected from electricity consumers and paid $ 2.9 billion into the Nuclear Waste Fund. Now DOE faces significant opposition to the continuation of NWPA implementation from the States, and affected Indian Tribes, that have sites selected for characterization for the first repository.

Congressional Actions Desired

For DOE to take the necessary steps to implement the NWPA during FY 1988, we continue to ask Congress, in addition to authorizing, funding, and not restricting the use of the MRS, to appropriate sufficient funds from the Nuclear Waste Fund, monies provided by electric utilities and their consumers, to proceed expeditiously with site characterization (including drilling exploratory shafts). Also, we urge Congress to provide equitable payments to the Nuclear Waste Fund for defense waste disposal. In addition, we continue to support the need for broader incentives to the States, Indian Tribes and local communities that will host high-level radioactive waste disposal facilities, including, as indicated above, the MRS facility.

Mission Plan Amendment

On June 9, 1987, DOE submitted to Congress a Mission Plan Amendment. It lays out a new program strategy that shifts the operational date of the first repository from 1998 to 2003, that indicates DOE will live up to its contractual obligation with electric utilities to take spent fuel in 1998 by use of the MRS, that reprograms the second repository effort and pledges better cooperation with affected parties.

Congress passed the Nuclear Waste Policy Act of 1982 in December 1982 and President Reagan signed it into law on January 7, 1983. Even though most of the statutory schedule dates have not been met, several very important milestones have been reached. Most importantly, the three first repository sites for characterization were named and approved by the President. It is unfortunate that the impasse over the recommended second repository reprogramming is threatening the progress achieved to this point on the first repository and MRS. One of the challenges to the present program is the perception by some that a delay in implementing the NWPA is acceptable and even desirable if it results in a better repository system. The program may continue to be paralyzed by the quest for a better solution, even though the direction being pursued is entirely adequate for the safe disposal of nuclear waste.

Electric Utility Storage Programs

The industry is concerned about whether or not DOE will be allowed, by opponents to NWPA implementation, to live up to its statutory and contractual obligation to take spent fuel by January 31, 1998 and what recourse might be available to utilities in the event that it is not. In the interim period, which is beginning to look longer than understood when the NWPA was enacted, the utility industry will be faced with providing spent fuel storage at reactor sites. A number of utilities have developed, or are developing, at reactor storage alternatives against the day that the spent fuel storage capacity originally built into the reactor plants proves to be insufficient. For example, Virginia Power has completed, licensed and is demonstrating a dry cask storage installation at the Surry Station; Carolina Power and Light Company has a licensed dry storage concept using air cooled vaults. Others continue to expand pool storage capacity by installing higher capacity storage racks and a few are involved in developing rod consolidation technology. Electric utilities recognize that they are responsible for at-reactor storage of spent fuel until DOE takes responsibility in 1998. However, if any utility's spent fuel is not taken from the reactor site by DOE under the original NWPA schedule, it will have to expend additional sums to continue at-reactor storage. Those utilities could very well seek recovery of those expenditures from the Federal Government due to its failure, for whatever reason, to live up to its contractual obligation.

It would be inappropriate for the high-level radioactive waste disposal system to include at-reactor storage as more than a temporary expedient until the MRS is available. At-reactor spent fuel storage and related activities could not substitute for the MRS. As discussed above, the MRS is much more than a storage facility. Essential functions of preparing the waste for permanent disposal by carefully placing it in extra high quality repository ready containers that will effectively contain the waste for a long time will be performed at the MRS. Having the MRS near the majority of the nuclear energy plants permits an efficient transportation system and the use of unit trains for the long haul from the MRS to the repository. Flexibility for the disposal program and early progress that is not on the critical path of selecting the repository site are the principal advantages of the MRS. Furthermore, we question whether electric utilities that operate nuclear energy plants should be required to perform functions as part of the high-level radioactive waste disposal system. There are tremendous technical, operational, regulatory and institutional barriers to having electric utilities perform these functions. Also, it only makes sense to concentrate these activities at a single location rather than at 72 locations across the country. And, for the reasons stated above, that location should be the MRS.

GENERAL ACCOUNTING OFFICE MRS SURVEY

Returning to the question of industry support for the MRS and the GAO survey (May 1986 Fact Sheet). A close examination of the GAO questionnaire and summary report reveals an unusual and questionable approach used by the GAO. GAO distributed its survey several months before the DOE draft MRS documents were available for review within the industry. In the survey's introduction, GAO provided a 57 word comparison of the MRS and repository to give the responder some idea of the concept. In doing so, the GAO erred in its description of the MRS, making it appear to provide a simple storage function at an expensive facility. GAO asked two basic types of questions: (1) the utility's plans for storage of its spent fuel at reactor sites, and (2) the utility's view on the need for an off-site storage facility before 1998. No discussion on relative advantages and disadvantages of the MRS was provided. The GAO questions missed the basic points of the MRS facility and the survey results were not surprising - only misleading. All questions, unfortunately, presupposed that the repository would be available by 1998. As the previous discussion points out, one purpose of the MRS would be to help bring about progress that would lead to an operational repository as close to the 1998 date as possible. Since the GAO survey questions assumed that this occurs even without the MRS, then the responses cannot be taken as a proper measure of the industry position. Consequently, the GAO survey and its conclusions are invalid. The electric utility industry fully supports the MPS facility and the GAO survey results do not reflect the utility industry position, because of the faulty approach taken by GAO.

CONCLUSION

The NWPA was a product of Congress's determination that disposal of high-level radioactive waste is essential in order to preserve this nation's nuclear energy option. It is imperative that concerns regarding NWPA implementation be addressed and resolved and Congress take positive action this year to assure that a national high-level radioactive waste disposal system becomes a reality:

- authorize, fund and not restrict the use of the MRS and
- fund first repository site characterization, including exploratory shaft drilling.
- provide broader incentives to States, Indian Tribes and local communities that host high-level radioactive waste disposal system facilities.

Thank you for the opportunity to present our views on the Monitored Retrievable Storage facility. We would be pleased to answer your questions.

* * * * * *

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STATEMENT OF BROOKS B. YEAGER

WASHINGTON REPRESENTATIVE

REGARDING THE DEPARTMENT OF ENERGY'S PROPOSAL

FOR MONITORED RETRIEVABLE STORAGE (MRS),

THE ROLE OF MRS IN THE FEDERAL HIGH-LEVEL NUCLEAR WASTE PROGRAM,

AND LEGISLATION AMENDING THE NUCLEAR WASTE POLICY ACT OF 1982,

S.839, S.1141, AND S.1266

BEFORE THE SENATE SUBCOMMITTEE ON NUCLEAR REGULATION

HONORABLE JOHN B. BREAUX, CHAIRMAN

JUNE 18, 1987

"When we try to pick out anything by itself, we find it hitched to everything else in the universse." *John Muir*

National Headquarters: 730 Polk Street, San Francisco, California 94109 (415) 776-2211

Mr. Chairman, Members of the Subcommittee,

Thank you for the opportunity to present the views of the Sierra Club on the Department of Energy's program for the management and disposal of high-level radioactive waste, and the role of the proposed "monitored retrievable" storage facility (MRS) in the program.

The Sierra Club is a national conservation organization with over 400,000 members dedicated to protecting our natural resources and the environment. We have members in each of the states under consideration for the development of high-level waste (HLW) repository and MRS facilities, and also in the states in which commercial and defense wastes are now in temporary storage. We have taken an active interest in the implementation of the Nuclear Waste Policy Act (NWPA) from its inception.

I have attached for the Committee record the policy resolutions regarding HLW management and the implementation of the NWPA adopted over the years by the Sierra Club's Board of Directors.

THE MRS IS NOT A NECESSARY PART OF A FLEXIBLE SPENT FUEL DISPOSAL SYSTEM; THE ESTABLISHMENT OF AN MRS-BASED SYSTEM WILL HAVE SUBSTANTIAL DISADVANTAGES OVER A NON-MRS SYSTEM

As a matter of national policy, the Sierra Club agrees that the Federal Government should have responsibility for the final disposal of commercial, as well as defense nuclear waste, and that geologic disposal offers the most promising technical option for isolating this lethal material from the biosphere for the hundreds of thousands of years necessary for it to decay to acceptable levels.

However, we also oppose MRS as an unnecessary and unwise addition to the Federal high-level waste program. I would like to briefly touch on some of the reasons for our position:

* MRS is not needed for a functional HLW management system. Although one of DOE's principal arguments for the facility is its utility as a "buffer" which will "decouple" the spent fuel acceptance and shipment schedule from the repository loading schedule, this function can be accomplished more efficiently through the use of a temporary storage and handling facility at the repository itself - a facility which will be necessary in any case. (Such facilities have been contemplated as part of the surface complex associated with a repository in most reference designs - cf. Technology for Radioactive Waste Management, 5 vols., DOE, 1980).

* The development of an MRS-based HLW management system will inevitably undermine the institutional commitment to final disposal in a geologic repository which is at the heart of the NWPA. The schedule for the development of the nation's first HLW repository has, by DOE's own admission, already slipped by at least 5 years. As a result of DOE's mishandling of the site selection effort, the scientific rigor necessary to ensure the credibility of key siting decisions has been squandered, and the technical adequacy of the current pool of sites has been thrown into question. In such an atmosphere, the temptation to substitute indefinite storage for permanent disposal will grow, and the threat that one or more MRS facililities could become de facto repositories will intensify.

* The MRS will increase both the total transportation burden and the total cost of the HLW management system. According to studies undertaken for the University of Tennessee, an improved transport scheme using a combination of rail and truck shipments can reduce the total number of cask-miles to less than half the amount contemplated by DOE with an integrated MRS facility. In addition, the cost of such an optimal one-time transport system would be between $2 and $3 billion less than the costs of the integrated system projected by DOE.

* The MRS is not necessary as a "safety valve;" utilities can continue to store spent fuel on-site after 1998. Because of the availability of modular dry-storage casks, it is improbable that more than a few utilities can actually be said to have any near-term date at which they will "run out" of space to store spent fuel. While it is clearly not desirable to encourage surface storage at dispersed sites for long periods of time, there is no obvious constraint which would prevent utilities from storing on-site until the opening of a geologic repository.

THE FUNCTION OF THE MRS IN DOE'S "REVISED" NUCLEAR WASTE PROGRAM

Facilities for the surface storage of high-level nuclear waste, whether under the name of "monitored retrievable storage" (MRS), or "retrievable surface storage facility" (RSSF), have been considered for many years as potential supplements to, or substitutes for, disposal in geologic repositories. Various functions have been contemplated for such facilities, including: 1) permanent or semi-permanent storage of spent fuel or high-level waste; 2) interim storage of spent fuel prior to reprocessing; 3) storage of spent fuel prior to disposal in a repository; 4) preparation and temporary storage of spent fuel for transhipment to a repository; and 5) providing a disposal system "buffer" to allow waste acceptance on a declared schedule despite any uncertainties in the development of a final repository. (Cf. Report to the President by the Interagency Review Group on Nuclear Waste Management, March 1979; The Monitored Retrievable Storage Concept, U.S. DOE, December 1981; Mission Plan for the Civilian Radioactive Waste Management Program, Vol. 1, U.S. DOE, June 1985; Draft Mission Plan Amendment, U.S. DOE, January, 1987.)

The Atomic Energy Commission first proposed the idea of permanent retrievable surface storage as an alternative to geological disposal after its proposal to site the nation's first HLW repository underneath Lyons, Kansas was abandoned in 1973. Yet, despite the superficial attraction of the surface storage concept, it had been largely rejected by 1979, when the Carter Administration's Interagency Review Group (IRG) formulated the basic policy which Congress later embodied in the Nuclear Waste Policy Act of 1982 (NWPA).

Although the possibility of indefinite surface storage of HLW raised many concerns about the proliferation, sabotage, or theft of weapons material, and about future use or reprocessing of commercial waste, perhaps the most telling argument against it was stated in the IRG's 1979 Report to the President:

> The responsibility for establishing a waste management program shall not be deferred to future generations. Moreover, the system should not depend on the long-term stability or operation of social and governmental institutions for the security of waste isolation after disposal. (IRG, p. 16)

Section 141 of the NWPA requires a DOE proposal for MRS, but does not authorize the development or construction of a facility. However, in establishing requirements for DOE's proposal, Congress did, to some extent, define what functions it considered appropriate for an MRS. The proposal must be for a facility licensed by the NRC, and capable of storing wastes for long periods of time. It must be "integrated" with other facilities authorized by the Act, but it must not be located in the same state with a geologic repository. One reasonable interpretation of Congressional intent for the facility is that it was envisioned as a long-term backup storage technology which would be available for authorization by the Congress and subsequent construction should a clear need arise.

DOE's initial post-NWPA concept of MRS, as embodied in the original Mission Plan, was for a facility which would fulfill functions 4) and 5) above; that is, which would be a center for the repackaging of spent fuel under shipment to a repository, and which would have sufficient storage space so that it could be used to maintain a stable waste acceptance schedule whether or not there were uncertainties in the waste loading schedule at the final geologic repository. DOE argued that such a facility would increase the efficiency and safety of spent fuel transportation to a repository, and would improve the performance of HLW delivery system by centralizing its transportation functions.

However, in a number of studies which followed the original MRS proposal, DOE's conclusions with regard to the benefits of the MRS in terms of transportation and system efficiency were disputed. (Cf. "The MRS: An Assessment of Its Need and Feasibility," William Colglazier, Forum for Applied Research and Public Policy, Spring 1986, "Status of Spent Fuel Technology Related to the DOE's MRS Proposal," R.E. Hoskins, Presentation to the Southern States Energy Board Advisory Committee on Radioactive Materials, February 10, 1987, and "Optimum MRS Site Location to Minimize Spent Fuel Transportation Impacts," R.E. Hoskins, Presentation to Waste Management '87 Symposium, March 3, 1987.) The conclusion of these studies, in summary, was that virtually all of the transportation efficiencies and system performance improvements claimed by DOE for the "integrated MRS" could be achieved by improved emphasis on transportation coordination and control, and without the development of an MRS facility. In addition, the studies pointed out that the addition of an MRS proposed by DOE would significantly increase the total transportation load of the spent fuel delivery system. Finally, they pointed out that the MRS would likely increase the total waste disposal system costs by at least $2 billion, with little additional benefit to system operations.

In the Revised Mission Plan submitted this January, the essential purposes of the MRS are described in a radically different fashion from the functions described in the original Mission Plan. They are: to allow "accelerated waste acceptance from the utilities;" to "significantly reduce the need for new temporary storage capacity at reactor sites and the attendant fuel-handling operations, licensing efforts, and costs;" and thus to "allow waste acceptance to begin by 1998," despite the fact that the nation's first HLW repository will not be available until 2003, five years after the date originally promised by the Department.

It is reasonable to question whether the new "benefits" identified for the MRS are worth the $2 billion plus which will be spent on the facility, and whether the incremental hazards associated with the increased transportation load which the MRS would entail are in any way justified.

It is also reasonable to question whether the alleged advantages of MRS construction warrant the strenuous political exertions which will be necessary to overcome the overwhelming opposition to the facility which currently exists among the people of Tennessee.

Finally, it may be worth examining whether these new "benefits" are actually likely to be achieved at all.

Judging from the most recent descriptions of the MRS in the Revised Mission Plan and the MRS submission itself, DOE now regards the facility primarily as a means of allowing the physical acceptance of spent fuel in 1998, despite the admitted fact that no repository will be available at that time.

In this context, it is reasonable to inquire how the 1998 date was originally arrived at, and whether it has any legitimate basis, either in terms of an achievable schedule for developing a repository system, or in terms of the capacity needs of utilities for at-reactor storage of spent fuel.

THE POLITICS OF THE 1998 WASTE ACCEPTANCE DEADLINE

Well before the 97th Congress took up the legislation that eventually emerged as the NWPA, DOE, following the broad outlines of the IRG recommendations, had put in place a program to investigate and bank potential repository sites and to develop a repository system for the permanent disposal of commercially generated HLW. That program is set out in detail in DOE's 1978 submissions in the so-called NRC "Waste Confidence" Rulemaking.

The DOE pre-NWPA program contemplated a site characterization and selection effort which would study 3 already identified sites (Hanford, Nevada, and WIPP), in addition to sites in three media: dome salt, bedded salt, and granitic rock. Each site would be subjected to a tiered environmental review, including the preparation of a full EIS prior to shaft drilling, with the results of in-depth site characterization being evaluated in another EIS for submission to the NRC as part of the application for a construction authorization. The schedule for repository development, assuming the initiation of full at-depth site characterization in 1982, projected the beginning of repository operations in the year 2006.

However, during the extended debate on the NWPA in the 97th Congress, DOE drastically altered the shape of the Carter Administration program. Under severe pressure from the nuclear industry and some key Congressional leaders to show faster progress on the road to a repository, DOE testified in favor of a repository development schedule fully eight years shorter than the program it had submitted to NRC.

Clearly, the 1998 date has never had much to do with any realistic assessment of the time necessary to develop the nation's first operating geologic HLW repository. DOE's admission, in its Revised Mission Plan, that no repository will open before 2003 should not have suprised anyone.

At the same time, the 1998 date seems to have little relation to any actual physical constraints on on-site disposal by the utilities. During the debate over the NWPA, the utility industry did claim that its spent fuel storage capacity, in terms of existing water pools, was severely limited, and in fact asserted that many reactors would have to cease operations unless Away From Reactor storage (AFR) was made available by the Federal government. However, the critical dates asserted by the utilities for this storage crisis have already passed. Although the Congress was enough persuaded by the utilities' complaints to provide for a limited last resort AFR, the Act clearly indicates a Congressional preference for the expansion of at-reactor capacity, and in fact provides expedited licensing procedures for certain on-site capacity expansions. There is no evidence that Congress considered the MRS to be an answer to the short-term capacity needs alleged by the utilities; and in fact, the lengthy timeline contemplated by the Congress for the authorization, construction, and licensing of the MRS clearly makes it unavailable for such a purpose.

Since the passage of the NWPA, the emerging technology of modular dry cask spent fuel storage has largely mooted the storage "crisis" predicted by the utilities. Dry casks are already in use at some utilities, including VEPCO and TVA, and there seems to be little obvious restriction which would prevent them from being widely available to utilities as a low-cost method of incrementally increasing at-reactor storage capacity.

It can legitimately be argued that the presence of the NWPA's 1998 deadline reflects DOE's failure, during the evolution of the Act, to distinguish the government's interest in assuring the establishment of a safe and responsible disposal system from the interest of the nuclear industry and private utilities in forcing government responsibility and physical custody of nuclear waste at the earliest possible date.

THE MRS: A TWO BILLION DOLLAR SAFETY VALVE WHICH MAY NOT WORK

Judging by the evidence in the Revised Mission Plan, this unfortunate confusion of goals is still central to DOE's concept of its mission and obligations under the Act. It is clear, in other words, that despite all the other ancillary claims that are made for the MRS, the central function of the facility in the revised DOE HLW program is to ensure that DOE can still begin the physical acceptance of utility spent fuel on the unrealistic schedule to which the Department committed itself in 1982.

The MRS has become a safety valve for a failed repository program. In that capacity, it is a legitimate concern of the people of Tennessee that the safety valve could all too easily turn into a de-facto surface repository for HLW.

The technical problems associated with the first round repository sites chosen by the Department are of a fundamental, not a trivial nature. In the view of many observers of the program, it is entirely possible that none of the first round sites will prove out under intense investigation. In such circumstances, an already authorized long-term storage facility, even one with statutorily limited capacity, may prove to have an irresistible political appeal, no matter what its real-world drawbacks may be.

In order to address this problem, DOE has proposed to link the operation of the MRS to the timing for a construction authorization for a repository. However, as noted by Colglazier (op. cit.), such a linkage, if it could be enforced, would actually vitiate one of the chief advantages claimed by the Department for the facility: that it would allow the "decoupling" of the repository loading and waste acceptance schedules, so that uncertainties in repository development would not affect the predictability of the spent fuel shipment schedule.

Even if a succeeding Congress should sever the link tying the MRS development schedule to the repository construction authorization, it may not be possible to bring a facility into operation by 1998. In the Revised Mission Plan, DOE indicates that the 1998 MRS start-up debate is only possible with "prompt authorization." A look at the MRS Program Plan, which is the third volume of DOE's Congressional submission, explains why.

The so-called "critical path" for MRS development, as projected by DOE, will take a minimum of 10 years. Given DOE's record in meeting other program timelines, and the fact that there are no licensing precedents for a central storage facility of the type envisioned by the Department, one would have to regard this critical path as optimistic at best. If one adds to this bleak picture the profound disaffection and resentment felt towards DOE and its proposed facility in Tennessee, it is only realistic to assume that the MRS schedule, like so many of DOE's other schedules, is a pipe dream.

ALTERNATIVES TO THE "BACKSTOP STORAGE" OFFERED BY MRS

As indicated in the studies of Colglazier and Hoskins, the system performance benefits claimed for MRS can be achieved without the expense and disadvantages associated with the facility proposed by DOE. In addition, the ability of utilities to utilize modular dry storage technologies on-site means that there is no near-term capacity crunch which makes a central storage facility necessary.

However, utilities may legitimately argue that they should not be financially penalized by being forced to pay for dry cask storage when they are already paying into a waste fund to develop a disposal system which the Department promised would be in operation by 1998. In order to resolve this problem, the Sierra Club believes that legislation could be enacted to allow utilities to claim credit against their obligations to the waste fund to cover expenses for additional on-site spent fuel storage after 1998. Such legislation would clearly indicate a Congressional view that the preferred method for continuing interim storage of spent fuel prior to the opening of a repository is by incremental additions to at-reactor storage. It would avoid the financial disadvantages, increased spent fuel transport, and safety hazards associated with MRS, while also ensuring that utilities are not financially penalized for the failure of the Department to meet its self-imposed disposal deadlines.

THE CURRENT STATUS OF THE HLW REPOSITORY SITING PROGRAM

Four years after the passage of the NWPA, the DOE HLW repository site selection effort is in disintegration. The site selection guidelines developed by DOE pursuant to Section 112 of the Act are under court challenge, as are the environmental assessments on the first round sites. The first round site selection effort itself, already running two years late, has been suspended by Congress. This Congressional suspension reflects not only political opposition to the selection of the Washington, Nevada, and Texas sites, but also deep-seated and well-founded misgivings with regard to the rigor and technical adequacy of DOE's siting and ranking decisions.

The effort to screen favorable rock formations for the so-called second-round repository has been indefinitely deferred by the Department. This decision was apparently based on political considerations, although the Department has attempted strenuously to justify it after the fact.

The Department's attempts at the ex post facto legitimation of the effective cancellation of the second round, as contained in testimony delivered by Secretary Herrington and OCRWM Director Rusche at the time of the submission of the Revised Mission Plan have been blatantly self-contradictory.

Secretary Herrington at first asserted, before the Committee on Energy and Natural Resources, that unless Congress explicitly rejected the revised plan through legislation, DOE would construe the lack of a response as tacit agreement, and would move forward with the revised program. Within a week, Director Rusche had reversed that position before the House Subcommittee on Energy and Power, asserting that, unless Congress explicitly confirmed the revised program through legislation, DOE would restart the second round siting program this year. One can hardly blame those from eastern states who view this latest DOE declaration as thinly-disguised regional blackmail.

THE LEGISLATION PRESENTLY BEFORE THE COMMITTEE WILL NOT RESOLVE THE PROBLEMS WHICH HAVE HOBBLED THE FEDERAL HLW EFFORT

To date, three bills have been introduced to alter, in some cases drastically, the framework which Congress established in 1982 for the nation's HLW disposal effort. Two of the bills, S.1141 by Senator Hecht and S.1266 by Senator Evans, would in effect substitute long-term storage for geologic disposal as the goal of the federal HLW program, although S.1266 appears to contemplate the reactivation of the HLW repository si selection process after a ten year hiatus. The third bill, S.839, by Senators Johnston and McClure, would authorize an MRS, and would amend the NWPA by allowing for the negotiation of "incentive agreements," under which individual states would give up their legal and procedural rights to oppose the siting of MRS and repository facilities in return for annual payments ranging from $50 to $100 million.

Although the bills proposed by Senators Hecht and Evans are based on legitimate concerns about the state of the repository site selection program, the alternative they propose seems to be based more on hope than on a realistic assessment of the technical options available for the management of HLW. Both bills would substitute long-term storage for permanent disposal as the near-term goal of Federal waste management efforts. In S.1141, the nature of such interim storage is not specified; S.1266 would authorize a national system of regionally-located MRS facilities to which spent fuel would be shipped.

Both bills hold out, as a policy option, a return to reprocessing and a mixed-oxide fuel cycle. The underlying assumption of both bills seems to be that long-term storage would at least allow the cooling of spent fuel prior to disposal, and ideally might provide an opportunity to resurrect reprocessing as part of a new national HLW management policy. Reprocessing is assumed to be advantageous in itself, and it is also assumed that it would make ultimate disposal easier.

The previous record of reprocessing efforts, both in the U.S. and worldwide, makes these assumptions quite dubious. In the U.S., reprocessing has proven to be an economic non-starter and a technical failure, and, in the case of West Valley, an environmental nightmare. The international experience, although more mixed, is no cause for jubilation. In the U.K., the Sellafield Plant has caused severe radioactive pollution of the Irish Sea. A realistic assessment of the worldwide uranium market clearly indicates that, without government subsidies, reprocessed mixed-oxide fuel will continue to have difficulty competing with once-through uranium fuel as the basic feedstock of the existing reactor complex.

Although the objective of cooling spent fuel prior to disposal in a repository has clear technical merit, such cooling can largely be accomplished by manipulating the repository loading and spent fuel shipping schedules so that the oldest fuel gets loaded first. Beyond that, there seems to be little advantage in indefinitely delaying the effort to site and develop a geological repository, which would be the ultimate effect of both bills.

While both S.1141 and S.1266 are based on the assumption that the repository siting effort is essentially hopeless, S.839 seems to assume that there is nothing really wrong with it at all, except perhaps that it is expected to cost too much. S. 839 will not correct the technical deficiencies that have plagued the DOE repository siting program; it will exacerbate them. The basic assumptions behind S.839 are that it is politics which is holding up the HLW siting effort; that a repository can be sited safely almost anywhere; and that a well-placed financial incentive will mollify the concerns of citizens who heretofore have opposed the location of HLW facilities in their commmunities. Unfortunately, these assumptions are false.

In geologic disposal, the primary barrier for the isolation of thousands of tons of HLW which will remain dangerous for hundreds of thousands of years must be provided by the integrity of the rock mass in which the repository is located. Consequently, the successful siting and development of a HLW repository requires a rare and difficult-to-achieve certainty in geologic prediction, and demands an unprecedented and complex scientific and technical effort which must be undertaken with the utmost care and technical rigor. The lack of such care and rigor, and the technical inadequacy of many of DOE's siting decisions, has fueled public skepticism concerning the program.

Instead of addressing these technical concerns head-on, however, S.839

would strip the siting process of any technical veneer whatsoever, substituting instead a purely political process for selecting the nation's primary candidate site for a geologic repository. Under the structure of the bill, once an incentive agreement has been reached concerning a proposed repository site, all site work at other sites would be suspended, and only the site subject to the agreement would be fully "characterized" to determine its technical adequacy for hosting a geologic repository.

This "sequential" site characterization scheme has been proposed as a way to save money: full at-depth site investigations are now expected to cost over $1 billion at each of the three sites under current consideration. However, the fact that only one site will be thoroughly examined eliminates any possibility of comparing the relative advantages and disadvantages of a pool of sites. And, if the first site characterized proves to be technically deficient, other sites will have to be characterized at a time when the costs for such work will undoubtedly be far higher.

S.839 will not even solve the "political" problems which its authors believe have hobbled the HLW siting effort; it would be a rare Governor who was fool enough to enter this bargain. The Governors of the three states under consideration for the "first round" repository have already rejected the agreement offered by S.839, as has the Governor of Tennessee, where DOE has proposed to locate its MRS. It is not hard to see why:

Sec. 401(g) of S.839 provides that "determinations made by the Secretary under this title are not subject to judicial review, including but not limited to the determination by the Secretary to enter or not to enter into an incentive agreement." In addition, Sec.402(b)(3) requires that, as part of an incentive agreement, "the state or affected Indian tribe waive its rights established under this Act to seek judicial review of issues covered by the Agreement," and the succeeding paragraph requires the state or Indian tribe to waive its rights to disapprove a site recommendation to the Congress.

Sec.406 provides that the Secretary may terminate any incentive agreement if the state or Tribe acts in manner which the Secretary finds to be a substantial breach of the agreement, or if the Secretary determines that the state or tribe has been "dilatory" in its participation under the agreement, or if the state or tribe is in default. Finally, Sec.402(b)(5) provides that, in the event an agreement is terminated due to the default of a state or tribe, the state or tribe must repay all payments received under the agreement, with interest.

These provisions strip any state or tribe which is foolish enough to sign such an agreement of all of the normal avenues open to a contracting party to enforce the elements of a contract. No matter how arbitrary a DOE decision, no matter how capricious a DOE interpretation, no matter how inadequate a DOE analysis, the state will have no power to challenge without being charged with "dilatoriness" and threatened with a DOE determination (which also may be arbitrary) that it has defaulted on its obligations under the agreement. Any state or tribe which signs such a "big brother" agreement will inevitably be held hostage to it.

The siting system envisioned by S.839 would also have troubling implications for states other than the actual host state. Under the NWPA, contiguous or "downstream" states and states which would become transportation corridors to particular repository sites at least have a framework in which to assess and compare the relative impacts of particular siting choices or transportation decisions. Under S.839, they would have no role at all.

Because the signing of an incentive agreement will result in the suspension of activities at all other sites, there will be no basis for comparing transportation or other impacts to neigboring or corridor states. Moreover, S.839 does not allow such states any role in the negotiations leading to an incentive agreement, and specifically bars them from challenging the terms or wisdom of such an agreement in court. Finally, it makes no provision for payments to states or localities other than those directly involved in the incentive agreement.

S.839 cannot "put the DOE waste program back on track", because it does not address the real problems which have derailed the siting effort. It does nothing to encourage the scientific rigor which must be present to assure the public that the best possible repository site will be selected. It will not remedy the institutional defects which have caused such contention between DOE and the states.

While we agree with Senators Evans and Hecht that the repository siting program has been badly mishandled by DOE, we do not think that the solution is to abandon the goal of geologic disposal, or to indefinitely suspend the effort to develop a geologic repository. Instead, we believe that Congress should continue the present suspension of the siting effort, and at the same time act to establish a mechanism for the review of DOE's implementation of the NWPA to date. Such a review panel or commission, which could be based on suggestions which have been made by Governors Gardiner and Clements, should be instructed not only to evaluate DOE's technical and institutional performance in the course of the site selection and systems development for a repository, but also to make recommendations to the Congress as to the changes which may be necessary in order to establish a siting program which has a greater probability of achieving the national goal of developing a safe, publicly acceptable repository.

Testimony of Roy F. Pruett, Mayor
City of Oak Ridge, Tennessee

before the

Subcommittee on Nuclear Regulation

Senate Committee on Environment and Public Works

Regarding the Department of Energy proposal for a
Monitored Retrievable Storage Facility

Honorable John Breaux, Chairman

Thursday, June 18, 1987

Honorable Chairman, Members of the Committee, Ladies and Gentlemen:

My name is Roy F. Pruett, Mayor of the City of Oak Ridge, Tennessee, and Executive Committee Member of the Clinch River MRS Task Force. It is an honor to be here today to testify before this distinguished committee and present the findings of the Clinch River MRS Task Force as they relate to Subtitle C of the Nuclear Waste Policy Act of 1982 and to the Department of Energy proposal on the Monitored Retrievable Storage (MRS) facility.

As the committee is aware, I represent the City of Oak Ridge which has been named as both the primary and the first alternative site for the proposed integrated MRS facility. I must say that as the potential host communities, Oak Ridge and Roane County are unique from other governments which may be impacted by the siting of an MRS. That is because, should it be approved, we are the citizens of Tennessee who alone will live on a day-to-day basis with the facility -- with all its attendant concerns and risks. And it will be in our own backyard. As such, we have a particularly strong interest in maintaining a dialogue with Congress and appreciate the opportunity afforded today to continue that process.

After the public announcement that the Department of Energy had selected three potential sites in Tennessee for the MRS, a task force of local citizens and elected officials was formed. Thus, the Clinch River MRS Task Force was established in July 1985 to study and recommend a community position relative to the construction and operation of the proposed MRS facility in Oak Ridge. After several months of study by this "Blue Ribbon Panel" of civic and governmental leaders, we concluded that an MRS could be safely built and operated in Oak Ridge. We further concluded, however, that the facility would not be generally perceived as being acceptable unless the recommendations of the Task Force were adopted in order to address citizen concerns and help mitigate negative impacts of the facility.

The summary conclusion was that the MRS would not be viewed as a net economic benefit to the host communities, the region, or the State of Tennessee unless congressional authorization for the facility included certain mitigating actions and conditions.

The Task Force identified five major areas of concern regarding the siting of an MRS. Our concerns include the following:

1. The inherent health and safety issues, which were and still remain of primary concern;
2. The potential for the MRS facility to become the permanent site for storage of the nation's spent nuclear reactor fuel;
3. The adverse effect the facility may have on economic growth and diversification in the host communities and region;
4. The lack of assurances that all commitments made by the Department of Energy and the Congress will be fulfilled;
5. The possibility that our positive reputation for being high quality communities could be displaced by an unfavorable image of being a "nuclear waste dump".

These five major areas are supported by 32 specific recommendations, as identified by the Task Force and included in the executive summary of the group's final report. Copies have been provided for you.

Let me emphasize that it was not our charge, nor our undertaking, to determine whether an MRS was a necessary component in the disposal system for the nation's high-level nuclear waste. Our charge, rather, was to view from a community perspective, the proposal that was before us and to identify local concerns, anticipated impacts, and to recommended mitigative measures which would allow an MRS facility to be safely built and operated in the Roane County portion of Oak Ridge.

The Department of Energy proposal of March 1987 for the construction of an MRS facility in the City of Oak Ridge has yet to be formally reviewed by the Task Force. However, there are some preliminary shortcomings which have been identified. Each of these needs to be positively considered by the Congress. These are crucial elements to local acceptability of an MRS, as identified in the Task Force Study, and have not been included in the Department of Energy's proposal. The items of concern are summarized below.

The local host communities must be active participants in all deliberations with DOE concerning the facility. The Congress must amend into the Act the authority for the DOE to negotiate directly with those general local governments which will host the facility. It is through Cooperation and Consultation Agreements that the interests of the communities which must live with the facility will be best protected and represented. The state government must continue to have an equal role in the process, of course. But, by its nature the state must represent a much larger public, which has an entirely different set of priorities and concerns. We recognize that and it is not out intent to dilute that important role. On the other hand, we in the local communities are the people who will be subjected to increased risks and who will have to live under the shadow of the facility with its unknown effects on our future health, safety, welfare, economic well-being and prosperity. As such, genuine local control must be provided to the community in a manner that will assure our voice will be soundly heard. We believe this can only be guaranteed through congressional amendment of the Act in a manner which expressly authorizes Consultation and Cooperation agreements directly between DOE and the general local governments in whose jurisdiction the facility is constructed and operated.

There must be equitable local representation on a citizen's Environment, Safety, and Health Review Board having substantive powers. Without diligent adherence to rules, regulations, and safety procedures, the MRS could adversely impact the surrounding population and local environment. As such, a board comprised of an equal number of members from the local communities and the state must be established in order to represent the local community interests during all phases of the facility's life. Additionally, it is imperative that procedures be developed whereby the Board could cause a suspension of operations if releases from the MRS are greater than jointly preestablished levels.

The area of the DOE proposal, as submitted, which addresses this point represents a meaningful step forward for direct public participation but fails to fully recognize the significance of this issue related to environmental protection. Additionally, the proposal falls short of providing the institutional relationships necessary for local communities to be assured that the facility is indeed being operated safely and in a manner befitting the welfare of our local citizens.

Since the principle impact of the MRS will be on local jurisdictions; consequently, the local jurisdictions involved must have a substantially significant role in the oversight of MRS planning, construction and operation.

The MRS must not become a de facto permanent repository. The MRS facility could delay the construction and operation of a permanent geologic repository and become a de facto site for high-level nuclear waste and spent reactor fuel. Although the proposed "linkage" between operation of an MRS and construction of a permanent repository, as submitted by DOE, is intended to prevent the MRS from becoming permanent in nature, a level of vulnerability will continue to exist until such a linkage is mandated through legislative authority.

Our suggested resolution is that in addition to the preclusion of waste acceptance by the MRS until a construction authorization for the repository is received and limiting the storage at the MRS to 15,000 metric tons of spent fuel, we believe it is important that provisions for a significant "overdue-removal" penalty for fuel stored beyond a predetermined time must also be provided. This would be viewed as a further commitment of good faith on the part of Congress to maintaining the stated purpose of the MRS as a temporary storage and repackaging facility. This provision has not been included in the DOE proposal now before you.

In closing, let me identify some crucial elements which must be considered while forming the institutional mechanisms and programs needed to implement a national policy for transporting, storing and disposing of nuclear waste.

First, Fair and adequate compensation must be provided to the affected jurisdictions. The state and local governments must be adequately compensated for assuming the increased risk levels and uncertain consequences of hosting a nuclear waste disposal facility. These facilities will render a tremendous service to the nation by storing, repackaging, and disposing of high-level nuclear waste. Compensation to host communities must reflect the value of that service to the nation and should recognize the socio-economic impacts, health/safety risks, and public service to the citizens of the United States of America provided as a direct result of siting and operating an MRS. Moreover, the compensation must be paid at a rate equal the taxes which would accrue to the jurisdiction if the facility were privately owned and fully taxed.

Second, general local governments hosting a facility must be compensated separately and directly. Host local governments have a unique role and responsibility that must be recognized and which deserve special financial consideration and compensation. Such additional compensation must be made in addition to that provided to the state or other affected local governments. The special burden placed on situs communities because of the truly heroic service that they provide to the nation is deserving of compensation in sufficient amounts and kinds to off-set these particular burdens. Finally, this compensation must be guaranteed by Congress through dedicated revenue sources paid directly to the governmental jurisdictions in which the facility is operated.

In summary, the Department of Energy proposal for the construction of a Monitored Retrievable Storage facility in the Roane County portion of Oak Ridge has addressed many of the concerns of the Clinch River MRS Task Force, for which they should be commended. The Department has failed, however, to include certain other important items including local oversight and control of the facility and direct Consultation and Cooperation agreements with the local governments for the host community, including the provision of direct compensation payments which are of utmost importance to us.

Congress has an opportunity to amend the DOE proposal and accept the stringent, but reasonable, conditions recommended by the Task Force which could make the MRS facility acceptable to the communities of Roane County and Oak Ridge. I encourage you to adopt the Task Force recommendations in total.

Thank you for your kind consideration and attention. We will be pleased to provide any additional assistance as may be required by the Committee.

Roy F. Pruett, Mayor
City of Oak Ridge, Tennessee
Post Office Box 1
Oak Ridge, Tennessee 37831-0001

Senate Environment and Public Works Committee
Subcommittee on Nuclear Regulation

PROTECTION NEEDED BY MRS HOST AREAS

Testimony of Robert Peelle
County Commissioner, Roane County, Tennessee
June 18, 1987

Introduction:

Distinguished Committee, staff, and fellow guests, I am Robert Peelle, a county legislator in Roane County, Tennessee, and chairman of the Environmental Study Group of the Clinch River MRS Task Force. I bring greetings from Ken Yager, our County Executive who is unable to attend today, and ask that his written testimony be included with mine in the hearing record.

The Roane County portion of the City of Oak Ridge includes the preferred site and one alternative site chosen by the Department of Energy (DOE) in its submission to the Congress for authority to build a Monitored Retrievable Storage (MRS) facility. Roane County contains less than one tenth of Oak Ridge's citizens, but twenty thousand acres of the Oak Ridge DOE reservation.

Roane County has not taken positions on whether an MRS should be built or on the site selection process. We do request that our concerns be fully addressed if the Congress authorizes an MRS in Roane County.

Roane County and the City of Oak Ridge jointly appointed the Clinch River MRS Task Force (MRSTF) to study DOE's plans. When the MRSTF reported in October 1985, Roane County stated that the proposed MRS "*...could be acceptable to Roane County and provide a net economic benefit to our citizens if conditions equivalent to those in the Task Force Report are securely satisfied by the authorizing legislation and intergovernmental agreements provided for by that legislation.*" The county believed the MRS proposed by DOE **could be** operated safely with adoption of our safety-related conditions. The State of Tennessee was supportive of our MRS study.

DOE's MRS proposal now before Congress makes a real effort to deal with the concerns reflected by the Clinch River MRS Task Force (MRSTF), but could or did not fully satisfy many of them. Many citizens do not trust that Congress and the DOE will long continue to implement proposals designed to satisfy local concerns, and more believe that we cannot obtain needed actions beyond those proposed by the DOE. I am more optimistic than most.

Since much has happened since 1985, the MRSTF is now reviewing the formal DOE proposal relative to present local concerns. In any case, based on past MRSTF work, we already know several issues that require the attention of Congress. We believe these points apply to any form of MRS authorization and will be important no matter where an MRS might be sited.

This testimony discusses needs for (1) assuring that MRS storage is temporary, (2) building public trust that the facility will be operated safely over its lifetime regardless of unforseeable future changes in knowledge, policies, and implementation, and (3) assigning to the DOE the authority and responsibility to meet the concerns of the local community through legally binding agreements. Finally, (4) I emphasize that any MRS authorization needs to include provisions to protect citizens represented by local host governments.

Assuring that spent fuel won't stay forever at the MRS :

Roane County's conditional willingness to accept an MRS was based on DOE's proposal for an MRS having limited fuel capacity and storage interval. However, from the time Tennesseans first heard of the MRS, many have feared that spent fuel sent to the facility would never leave. The DOE claims no such plan. However, even those who trust DOE's present leaders worry that an MRS in use would remove the pressure needed for completion of a permanent repository, pressure for example from nuclear utilities to have spent fuel removed from their premises. People expect that the plan will one day be changed to greatly enlarge the MRS and make storage there effectively permanent. I think that's why many Tennesseans persist in calling the MRS a "nuclear waste dump." Only a successful program for permanent storage can make the idea credible that an MRS is only for temporary storage, so the MRSTF proposed linkages to the permanent repository program that involve both storage capacity and schedule : (the first two are included by DOE)

a) Limited storage capacity of 15,000 MTU.

b) No MRS operation until a permanent repository is licensed.

c) No more than 10,000 MTU shipped to an MRS until a permanent repository begins to accept shipments from it. (DOE now projects 6,000 MTU)

d) A large contractual annual "overdue removal penalty" or inspection fee to be paid to the state for any fuel cannisters that remain at the MRS longer than some fixed time, say 15 years.

These linkages should be accepted by the federal government and guaranteed by binding contracts between the DOE and state governments. The nation must keep its promises to any area in which it places an MRS.

Building public trust by offering some local control:

Public trust of government institutions is low, and trust of DOE in our area has been further damaged by revelations that emissions by the federal plants were not corrected quickly when national standards were put in place. This bad experience and general distrust have led to fears that an MRS that could be safe for the public will not be operated that way throughout its lifetime. That is why the MRSTF asked that authorization of an MRS be linked to completion of the environmental cleanup on the Oak Ridge reservation.

We have also found that much of the local public does not believe that the Nuclear Regulatory Commission would provide much protection. While it is recognized that the Tennessee Department of Health will also have some jurisdiction over an MRS, the public knows that intergovernmental conflict and inadequate funds have sometimes prevented this department from being fully effective.

Indeed, we know of no sure way to build trust that an MRS will be safe for the public and its workers, but our best idea is to combat the helplessness felt by individual citizens by instituting a measure of local control over the facility. We ask that an ongoing MRS Environment, Safety, and Health Review Board for the facility be appointed by local governments and the State of Tennessee. The Board would have full access to operational information, independent inspection and monitoring authority, and limited power to order that inbound spent fuel shipments cease if jointly pre-established operational standards are not being met. This mechanism would provide a way for new understanding of hazards or unforeseen developments to be accounted for, or temporarily irresponsible management to be corrected before severe damage is done. Since local citizens could influence appointments and would know some of the Board members, trust in safety would be increased.

The current DOE proposal embodies some of these functions into a suggested MRS Steering Committee that would predominantly represent nonlocal stakeholders. It would have broader jurisdiction but less power in emergencies. While we see merit in the Steering Committee concept and believe that formation of such a committee should be considered in any Consultation and Cooperation (C&C) Agreement between Tennessee and the DOE, we believe it would not replace the need for a locally based Review Board concentrating on health and safety issues near the site. Congress recognizes that public health and safety have higher priority in the public view than any other considerations; that priority should affect MRS institutional arrangements.

Membership of a Health and Safety Review Board should be dominated by persons from the local area who might suffer if the MRS should ever be operated unsafely. Formation and empowerment of such a Review Board should be mandated by Congress because the concept is unusual and might be difficult for the DOE to accommodate without Congressional direction.

Giving DOE the authority and responsibility to meet local concerns:

The Nuclear Waste Policy Act of 1982 does not give clear authority for some of the arrangements requested by Roane County and included in DOE's submission to the Congress. For example, clear authority should be given for grants equal to all taxes for the MRS, similar to the authority given for the permanent repositories, and for the proposed payments of equivalent size starting at the time of authorization. This issue is particularly sensitive in Roane County because of the long term difficulties we have had in obtaining payments in lieu of property taxes for the extensive local DOE research and production facilites.

The NWPA also does not clearly permit the DOE to negotiate binding agreements with local government units; indeed, DOE's proposal calls for achieving many of its commitments to Roane County through negotiations between the DOE and the State of Tennessee. While we anticipate that state officials will cooperate with us in meeting our needs, these officials will have other priorities in such negotiations and might overlook local issues. We would prefer direct arrangements and direct accountability in order to assure fulfillment of DOE's proposals relative to Roane County. Therefore, we request that formal authority be given to DOE to negotiate binding agreements directly with local government units on local issues. Other issues involve both state and local governments, and the local governments should be a party to those negotiations. The DOE should be asked by Congress to assure that local as well as state concerns are addressed.

While the MRSTF report confined itself to the needs of Roane County and the City of Oak Ridge if an MRS were sited there, task force members often expressed concern about the needs of the immediately surrounding areas. Some persons in nearby counties fear that an MRS would produce a stigma that would damage the economy of the region. (We understand these thoughts when we project our own reactions to the possibility of the facility being sited in neighboring Morgan County, for instance.) It is not clear that the DOE proposal would well compensate any such stigma. If standard licensing steps and measures like the proposed Public Health and Safety Review Board and public monitoring programs satisfy area concerns about safety, I personally believe that additional measures should be available to compensate the surrounding area for costs of the stigma associated with nuclear waste. The DOE needs the clear authority to do this.

Any MRS authorization should protect host communities:

Roane County requests that no matter what route the Congress uses to authorize an MRS, the measures proposed by DOE to mitigate local concerns be specifically included along with the additional points identified in the full MRSTF report. No one wishes to see nuclear waste host communities suffer; the Congress must make sure these good intentions are realized.

How can this Congress provide protections that future agency or congressional actions will not easily set aside? You often face such questions, and may know of means we have not considered. Our best thought is for Congress to explicitly empower the agency to enter binding contracts with the local governments including the major ingredients required to protect our citizens. Please provide for this stability of policy and decision implementation that can start to rebuild trust in government in our area.

Conclusion:

Roane County believes that the requests we made in concert with the City of Oak Ridge are reasonable. In the current climate, further measures are required to mitigate and compensate the local effects of a nuclear waste facility beyond those that seemed necessary a decade ago. For example, the issue of limited local control over potentially noxious facilities is a vital one I believe will have to be addressed widely in the future.

We ask that the mitigation and compensation measures discussed above be provided by the Congress in whatever legislation authorizes an MRS. We offer to work with you on details.

Thank you for your attention. We need your concerted attention to assure that any solution of the national high-level waste problem is fair to local host areas.

Robert Peelle
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SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
SUB-COMMITTEE ON REGULATIONS

THE MRS PROPOSAL OF THE DEPARTMENT OF ENERGY

Written testimony by Kenneth E. Yager, County Executive
Roane County, Tennessee
June 18, 1987

Mr. Chairman, distinquished committee members, my name is Ken Yager, and I am the County Executive of Roane County, Tennessee, preferred site of the proposed Monitored Retrievable Storage facility (MRS).

I am unable to attend the Committee hearings on this subject and I am therefore submitting copies of written testimony.

The Department of Energy proposal for an MRS in our county is unacceptable -- unless the Congress and Department of Energy (DOE) are willing to be partners with the local communities.

I suspect some of you have heard, read or been told that the Oak Ridge and Roane County communities support the MRS. That is not entirely the case.

Our local governments have said, and continue to say, that we believe an MRS could be operated safely, that the facility technically can be functional.

We have not, however, endorsed the concept of an MRS. That is a national policy question that the United States Congress will decide.

Our considerations have been limited to: (1) can an MRS be operated safely, and if so, under what conditions, and (2) what would be the impacts of the facility and how might those be mitigated?

Our recommendations on those two points led me to my earlier comments about being partners with Congress because our recommendations can be summed up simply as: local control.

We are exceedingly concerned about the prospect of being trapped in a national squeeze play -- caught between a recognized need for a way to deal with nuclear waste and intense political efforts to put that problem in someone else's backyard.

If we are to be that backyard, we would ask the Congress, and the Department of Energy to recognize our stake in this national effort.

In order to adequately protect ourselves, we must have an equal role in the process. That means we must have an extraordinary amount of authority -- extraordinary by most standards of federal and local government relationships.

We are asking Congress to amend the Nuclear Waste Policy Act (NWPA) to give local governments the authority to negotiate directly with the Department of Energy. Consultation and cooperation agreements with state governments are necessary, and should be concluded, but our interests in Roane County, and Oak Ridge, go beyond those of the state of Tennessee. DOE says it cannot make the recommendation to amend the NWPA.

It can, and should be, amended.

If those amendments are made, the local governments would insist on two basic principles: that we have equal representation, and equal authority, with the federal government on all matters pretaining to the operation of an MRS.

The Clinch River MRS TAsk Force requested a review board, with equal membership for the city, county and state, that would have full access to all information about the MRS operation and the authority to suspend its operations if clear evidence shows a threat to the safety, health or environment of local citizens.

The DOE proposal calls for a steering committee with little local representation, access to a lot of information, but authority to do virtually nothing.

We recognize that adopting the task force recommendations would be a precedent setting move for the federal government, an extraordinary sharing of power. But the federal government is asking our local citizens to take an extraordinary step -- accepting the high level nuclear waste for the entire country, and to do so in a political climate that leads us to believe we are not partners but sacrifices.

We would hope that members of Congress, a body that operates on principles of delicate compromise and balanced interests, could understand and sympathize with our requests for sharing authority.

Checks and balances, an old and much revered part of our governmental history is really what we're talking about.

Another, and equally important, recommendation of the task force calls for annual payments to the local governments that would be equal to property taxes paid by a private facility of equal value, and for DOE to be instructed to negotiate the payments directly with the local governments.

We recognize that our comments propose changes in the way the federal government deals with local government. We are asking for a partnership -- a partnership, frankly that has not occurred in the past. A partnership for tomorrow which will give local government a voice in its own destiny. A partnership that builds trust, the foundation for real progress.

Any community that is the site for a facility such as this, one that is highly technical, requires careful operation and oversight, and most importantly, is perceived to be highly dangerous, should receive the kind of considerations we are seeking.

Only by recognizing the local communities' stake in this national debate can the Congress and local citizens find a workable solution to a critical problem for our nation' future.

Thank you.

MORGAN COUNTY, TENNESSEE
A Sound and Scenic County
OFFICE OF
Morgan County MRS Study Group
WARTBURG, TENNESSEE 37887

STATEMENT
OF
Floyd E. Freytag, Co-Chairman
Morgan County MRS Study Group

Mr. Chairman, our interest is in Senate Bill 1266, and our remarks will be directed to the contents and provisions of this Bill.

First, let me say that we people in Morgan County, Tennessee are aware that our Tennessee Congressional Delegation is opposed to the MRS coming to Tennessee, and we have no quarrel with their position, because we're also aware that a vast majority of the people in Tennessee are opposed to the MRS coming to Tennessee, and that our Tennessee Delegation are doing what they do best, representing the views and wishes of the people of Tennessee. Our purpose here is not to lobby the Congress to bring the MRS to Tennessee.

For some unexplained reason, the word nuclear energy does not arouse the same apprehension in the people in Morgan County, that it seems to in people of other localities of our state. The people of Morgan County have indicated through resolutions passed by their elected legislative body, and resolutions passed by their elected City Council of the two incorporated towns in Morgan County, that if the Congress as a whole decides that a MRS will be placed in Tennessee, then we would welcome and urge that it be placed in Morgan County, providing of course, that certain conditions,

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and requirments, (or acceptable substitutes) set out in a proposal prepared and submitted to Bernard C. Rusche, Director of Civilian Radioactive Waste Management, June 12, 1986, by a 17 member Morgan County MRS Study Group could be agreed on.

We believe the location of the MRS in Morgan County could and would be of mutual benefit.

In April of 1985, the Department of Energy announced that three Tennessee sites were under consideration for the proposed MRS facility. Even at that early date, DOE indicated that the Clinch River Breeder Reactor site in Oak Ridge, Tennessee was their preferred site. We believe that the Clinch River site was a site they had selected before even coming to Tennessee, and that their site selection effort was purly window dressing or camouflage. At that time we were reluctant to propose a Morgan County site, because we felt it would be an exercise in futility. We had no voice strong engough to secure us a meaningful hearing with the giant Department of Energy.

However, important people and groups began to realize the devestating effect that the location of this facility could have on

MORGAN COUNTY, TENNESSEE
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the Oak Ridge-Knoxville area. It was preceived that this facility would do inmeasurable harm to the future developement of the Oak Rigde-Knoxville area, causing prospective industries which the Oak Ridge-Knoxville area is imminently qualified to service, to by-pass, or avoid the Oak Ridge-Knoxville area.

It was pointed out that the state of Tennessee is investing hundreds of millions of new dollars in the Technology Corridor from the Knoxville Airport to the Oak Ridge National Laboratory.

It was thought that the placement of a MRS facility adajacent to this corridor would seriously erode and damage its image as a Technology Center.

These concerns are well founded and supported by industry surveys which indicate the majority of the more desirable industries would avoid or hesitate coming to the Oak Ridge-Knoxville area, if the MRS facility was also located there.

The negative views and mis-givings expressed by various and important Industrial people toward locating a MRS facility in the Oak Rdige-Knoxville area alarmed Governor Lamar Alexander and members of the business community of the Oak Ridge-Knoxville area.

On January 21, 1986, (then Governor) Lamar Alexander released a statement based on a six month, 2,000 page study-report, by the Safe Growth Cabinet Council, assisted by 45 staff professionals on the proposed re-packaging plant, and I quote excerpts from that press release, " "MRS" is a repackaging plant--The government has given the plant a ridiculous name (Monitored Retrievable Storage Facility) that confuses almost everyone, and nuclear power opponents have given it an undeserved reputation that scares almost everyone."

"Oak Ridge is exactly the wrong place for it--it makes no more sense to put this repackaging plant in Oak Ridge than it would to put it on the Vanderbilt or Georgia Tech campuses or in a Memphis City Park or at the edge of Washington, D.C. It may be safe but it is not the kind of thing many people want in a nice front yard.

Oak Ridge is not the remote site on Black Oak Ridge it was 45 years ago when the secret Manhattan project began. It is an integral part of a three couty "Knoxville area" which is becoming one of the most attractive magnets in America for good, new jobs. Rand McNally has rated it as the best place to live in America. Manufact-

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uring companies are discovering that--as the population moves South--Knoxville is at the center of the market. The State is investing hundreds of millions of new dollars in the Technology Corridor from the Knoxville airport to the Oak Ridge National Laboratory for a new technical institute, for a Science Alliance, for an interstate quality highway, for an improved University of Tennessee. The corridor for the next 20 years will be the focus of new jobs for the Knxoville area, just as the Research Triangle is for much of North Carolina. Already High Technology reports that the 97 business along the corridor make it the largest high technology research park in America associated with a major university, even ahead of Stanford Industrial Park and Yale's Science Park.

It has taken 25 years of hard work for Knoxville to go from being called the ugliest city in America to being called the best place to live. It has taken 45 years for the U.S. Government to get serious about cleaning up waste in Oak Ridge and for the state government to invest in and connect the futures of Knoxville and Oak Ridge. Never before has the Knoxville area been in the center of the U. S. Market.

In short there could not be a worse time to drag the Knoxville-Oak Ridge area into what promises to be a several year national

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argument about a poorly-named, unwanted fuel rod packaging plant. Fairly or unfairly, "MRS" would be all anyone would remember about Knoxville-Oak Ridge. It would blot out the Smoky Mountains, the Best Place to Live Award, the fine energy laboratory, the clean-up efforts and the Technology Corridor. In short, it would run away many, many more jobs that it could ever attract. My common sense and a University of Tennessee survey both say that is the case."

It was indicated in a report received in the Governors office February 26, 1986, submitted by the Governor's Safe Growth Team, that there was nothing about the Clinch River Breeder site that could not be duplicated in many other places in East Tennessee, except that it was located in Oak Ridge and owned by the Federal Government.

The Clinch Breeder Reactor site and the proposed Morgan County site have the same general characteristics and either site could be utilized. Therefore, what are the advantages of the Morgan County site?

The Morgan County site is located on an 80,000 acre tract of uninhabited state owned land that is available.

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No families or persons would be dispossed of their property or required to vacate their home, or disrupt their lives. It is estimated that 95% of all transportation connected with the MRS will be by railroad. The site we have proposed is only 3.88 miles from a Class IV railroad, this access to the railroad would not be shared with anyone else. It would be used wxclusively by the MRS facility.

Therefore, the possiblity of an unforeseen accident would be less likely, and should one occur, the danger would certainly minimized.

Access to I-40 and from I-40 to I-75 would be through a remote area with very light traffic and again would cut the danger of truck incidents.

The Clinch River MRS Task Force of Roane County and Oak Ridge, has submitted a proposal to the Department of Energy, setting out the terms and conditions under which they would accept the proposed MRS facility in the Roane County part of Oak Ridge.

The Clinch River proposal is very similar to the proposal submitted by the Morgan County MRS Study Group. The Tennessee

Safe Growth Team estimates that under the Clinch River MRS Task Force proposal, the city of Oak Ridge, would receive $8,467,450.00 and Roane County would receive $7,377,809.00 for a total of $15,845,259.00 in tax equivalent payments.

The proposal submitted by the Morgan County MRS Study Group does not provide dollar and cent figures, but our calculations indicate that Morgan County's present tax rate of $6.60 could be reduced to approximately $1.75 or $2.00 per $100.00 assessed value. At the same time, increasing funds available to Morgan County for the operation of its local government by 100%. At a cost to the MRS facility of approximately $7 million dollars, a savings of $8 to $9 million dollars annually.

Morgan County is a poor county with the highest tax rate in Tennessee, and the largest per capita bonded indebtedness of any county in the state. Our bonded indebtedness is equal to approximately 25% of our appraised value for tax purposes.

Our limited tax base severely restricts the revenue available to operate our schools, provide law enforcement, maintain our rural roads, and our other county services. The most serious pro-

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blem confronting our county, is our inability to provide a quality education for our youth. Our children at the present time, are being educated in a sub-standard school system.

The Department of Energy could perform a valuable service to the nuclear power rate payers and at the same time provide desperately needed assistance to the people of Morgan County by locating the MRS facility in Morgan County.

In closing let me say again that we're not her lobbying the Congress to bring the MRS facility to Tennessee, however, if it must come to Tennessee locate it in Morgan County.

Thank you

TESTIMONY OF LEON LOWERY

TENNESSEE NUCLEAR WASTE TASK FORCE

BEFORE THE

SUBCOMMITTEE ON NUCLEAR REGULATION

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

U.S. SENATE

on

The Department of Energy Proposal for
Monitored Retrievable Storage of Spent Nuclear Fuel
In Tennessee

18 June, 1987

INTRODUCTION

In April of 1985, when the Department of Energy announced plans to build a facility for handling and storage of high level commercial radioactive waste in Tennessee, most of us had never heard of Monitored Retrievable Storage (MRS). The organizations and individuals in the State who had in the past concerned themselves with hazardous and radioactive materials quickly came to focus attention on the proposed facility.

Some new organizations came into being. One such is the Tennessee Nuclear Waste Task Force. The Task Force is not, strictly speaking, a new organization, but a coalition of other organizations with an interest in radioactive waste issues.

As we examined the proposed MRS two things soon became clear. The consultation and cooperation with the State envisioned in the Nuclear Waste Policy Act (NWPA) was not taking place, and was not likely to take place. This was high-lighted by the fact that an injunction was won by the State preventing the DOE from presenting the proposal to Congress on account of lack of consultation and cooperation. The second disturbing fact that emerged was that reasonable alternatives to the MRS were not even being examined by the DOE. The Department conceded in its Review Copy, Monitored Retrievable Storage Submission to Congress of December 1985 that justification for the MRS could not be based on absolute need, since the system "could be operated safely without an MRS." The decision must be made based on a comparison of alternatives.

DOE then proceeded to compare a system with an MRS to the most haphazard, unimiginative no-MRS alternative conceivable. No systematic attempt was made to look at ways in which a no-MRS alternative could be improved, or if those improvements could lead to a system superior to the MRS.

Further, the utility companies were being induced to support the MRS by means of financial incentives (dis-incentives, more often) which were not necessarily integral to the system. Alternatives to the MRS could be developed which would allow the utilities similar financial relief to that afforded by the DOE MRS proposal.

One of the areas in which the DOE is excercising this financial dis-incentive approach is that of research and development. The Department is giving support and assistance to projects which lead to the technology to be employed at an MRS. The utilities are receiving little help in projects which would lead to development of at reactor preparation processes (one of the alternatives to the MRS).

The deck seemed to be stacked against us. But as we looked more broadly at the radioactive waste problem we found friends in faraway places. With communication with organizations from the other states affected by the nuclear waste management proposals, we found a common experience.

The DOE had attempted to pit us one against the other in order to win support for its programs. We discovered, however, that we had much in common with the repository states.

Consultation and cooperation was not going on with the repository states any more than it was going on with Tennessee. The repository siting program was flawed with political consideration of technical problems. Weighting factors had been changed part way through the process in order to produce the desired results. In short, there were as many problems with the decision making process in the repository program as there were with the MRS program.

At this point the program for waste management is in such disarray that no credibility regarding integrity of purpose can be maintained. The politicization of the decision making process, both as to site selection for a repository and need for the MRS, has tainted the whole program. Attempts to "back door" funds for an unauthorized MRS through the appropriations process, as well as attempts to amend the NWPA through a Mission Plan Amendment have further reduced the credibility of the DOE program and raised the ire of Congress.

In light of the above described situation, the Tennessee Nuclear Waste Task Force has joined with the National Nuclear Waste Task Force to call for a plan which will give an opportunity to restore confidence, both technical and public, in the program for implementation of the Nuclear Waste Policy Act.

1. Bring a halt to DOE's flawed repository program. No money should be appropriated for siting activities, i.e., land acquisition, site characterization and or area characterization in first or second repository states.
2. Disapprove DOE's proposal to develop an MRS facility. MRS is not a suitable alternative to either the geologic repository program, or at reactor interim storage.
3. Establish an independent commission to review DOE's repository and MRS programs. Such a review would investigate the technical and institutional adequacy of these programs and make recommendations on how best to proceed.
4. Increase funding for research into and development of at-reactor waste management technologies, including dry storage technologies. Nuclear utilities must continue to rely on at-reactor storage while a sound waste disposal system is being developed.

Confidence in these programs must be restored. A guage must be taken now before large amounts of money are wasted and programs gain so much momentum that any reassessment, no matter how justifiable, would be a very costly and painful process.

I. LOCAL ATTITUDES TOWARDS MRS

Before going on to an address of issues surrounding the need and feasibility of The DOE proposal for an MRS as part of the nuclear waste disposal system, I wish to speak to the tendency to view the MRS as having received institutional support from local governments. This picture cannot be justified. In fact, local governments have never endorsed the MRS as it is being presented by the DOE. When viewed in a proper light the resolutions passed by the Oak Ridge City Council and the Roane County Commission must be seen as disapproval of the MRS proposal.

The resolutions voted by these bodies were in approval of the recommendations of the Clinch River MRS Task Force Report of 10 October, 1985, not of the MRS proposal:

> "NOW THEREFORE BE IT RESOLVED BY THE MAYOR AND COUNCILMEN OF THE CITY OF OAK RIDGE, TENNESSEE that the City Council of Oak Ridge hereby adopts the position of the Clinch River MRS Task Force as its own... "

> "NOW THEREFORE BE IT RESOLVED that the Board of Commissioners of Roane County does adopt the recommendations in the October 10 report of the Clinch River MRS Task Force...if conditions equivalent to those in the Task Force Report are securely satisfied..."

These endorsements being of the Task Force Report make the acceptance of the MRS hinge upon acceptance of and implementation of the mitigations and conditions of the Task Force Report. That Report is highly conditional:

> "WHEREAS, the MRS would not be seen as a beneficial addition to the region's economic base unless DOE is required by the Congress of the United States to comply with stringent but reasonable conditions equivalent to those recommended by the Task Force.
>
> "NOW, THEREFORE, BE IT RESOLVED BY THE MEMBERS OF CLINCH RIVER MRS TASK FORCE that the attached summary of the study group's reports on the proposed MRS facility is hereby adopted as the official position of the Clinch River MRS Task Force."

There follows in the Report ten pages of mitigations, conditions and findings. Many of those conditions are not found in either the MRS proposal or the Mission Plan. Following, find a list of some of those unfulfilled conditions.

> "1.1 A citizen MRS Environment, Safety, and Health Review Board should be established to represent

> the communities' interests...An equal number of Board members would be appointed by Roane County, the City of Oak Ridge, and the state."

(There is an "MRS steering committee" proposed by DOE, but with three members, including the chairman, appointed by DOE and only one each from the City and County. The Subcommittee on Environment, Safety and Health has neither the independence nor authority of the Board described by the Task Force.)

> "2. The proposed MRS facility could delay construction of the geologic repository and become a de facto site for permanent spent fuel storage. Despite clearly stated national policy to the contrary, there are legitimate concerns that once in operation, the MRS would relieve pressure on DOE and the Congress to follow through on plans to construct a permanent repository.
>
> "2.3 Any proposed extension of the MRS storage capacity beyond the 15,000 metric tons currently envisioned should be subject to the same review and notice of disapproval procedures followed to initially authorize the MRS.
>
> "2.4 Any spent fuel stored at the MRS longer than 15 years should be subject to a significant 'overdue-removal penalty' levied by the state."

(None of these conditions, meant to mitigate the fear of the MRS becoming more than what it has been represented as, are included in either the MRS Proposal, Mission Plan or the Mission Plan Amendment.)

> "4. Public trust in DOE has seriously eroded. Environmental problems, long-standing debates on issues of taxation, and DOE's historically poor relations with the communities and state leave many skeptical that DOE's assurances regarding the MRS will be fulfilled.
>
> "4.1 The MRS authorizing legislation should provide for consultation and cooperation agreements directly between DOE and units of local government as well as between DOE and the State."

(The Mission Plan Amendment calls only for "a C&C agreement with the host State to delineate a framework for cooperation among all involved parties.")

> "4.2 Congress should provide that the right to issue a notice of disapproval expires at the end of the 60-day period specified by the NWPA or six months after commencement of C&C negotiations with state and local

governments, whichever is later." (Never mentioned by DOE.)

> "4.4 A schedule for bringing all DOE Oak Ridge Operations facilities into compliance with state and federal environmental regulations should be established prior to Congressional authorization of the MRS."

(No such schedule has been seen as to radioactive effluents. DOE operations come under scrutiny of State and Federal agencies as regards hazardous and toxic waste, but are entirely self-regulated regarding radioactive wastes.)

> "4.6 A simple and inexpensive procedure to guarantee private property values surrounding the MRS site and along the railroad spur serving the MRS facility should be implemented by DOE." (A hard one to satisfy.)

> "Provided DOE is required by Congress to comply with stringent, but reasonable, conditions recommended by the Task Force, the group finds that the MRS facility could be made acceptable to the communities of Roane County and Oak Ridge"

In light of the fact that so many of the recommendations of the Task Force Report have been ignored by DOE and that acceptance of the MRS is predicated upon implementation of those recommendations, the Task Force Report, along with the Oak Ridge and Roane County resolutions concerning it, must be seen as institutional questioning of the MRS proposal.

Since the time of the study DOE has done nothing to overcome the caution of local officials. In fact, such support as did exist for the MRS is widely seen as dissolving. An editorial by the Knoxville Journal on Feb. 10 of this year said, "Support for the project in the Oak Ridge area was once a significant factor. It is dwindling fast...There are even suggestions that temporary storage could mean as much as 50 years, a period of time that further jars the Oak Ridge Community."

The fact that the license period for the facility has been extended from 20 years to 40 years, coupled with the proposal of the Mission Plan Amendment by DOE raised the specter of a permanent dump in the minds of erstwhile supporters of the "temporary" facility.

> "Frankly, I think that would turn the community against the MRS. Forty or fifty years may be temporary in terms of the life of the material, but it's not temporary to us." Oak Ridge Mayor Roy Pruett.

> "If they (DOE) are going to start changing the ante, I need to rethink my position." Roane County Executive Ken Yager.

Some see potential damage to industrial development as an important consideration. The State Safe Growth Team, along with studies by the College of Business of the University of Tennessee, Vanderbilt University, and the State Legislature maintain this position.

> "Growth is on the way for our area. My problem is how the MRS could negatively affect that." Roane County Representative to the State Legislature Jim Henry.

> "I certainly don't see how any industry would be attracted to the area with the MRS here." Sen. Anna Belle O'Brien.

Roane County commissioners have called, recently, for a review of the Task Force recommendations in light of subsequent developments. Since that review is still in progress, it would be premature for me or for anyone else to comment on what the results of that review might be.

A poll commissioned by Chairwoman Lloyd in the Fall of 1985 showed across the board opposition to the MRS. District wide disapproval was at 66%. Roane and Anderson Counties showed only 34% in support of the jobs the facility would bring. Every category, whether by income level, party persuasion, sex, race or age showed strong opposition. If that poll were conducted today the opposition would be stronger.

The Tennessee Valley Energy Coalition last year gathered 27,000 petition signatures against the facility in the counties of East Tennessee surrounding the proposed site. Public Service Commissioner Frank Clement in a primary bid for the governorship gathered over 100,000 more across the State.

Two governors, both houses of the legislature, every member of Tennessee's delegation to Washington, the Attorney General's office, the State Safe Growth Cabinet Council and every other branch of State government are opposed.

Tennessee does not want the MRS.

We in Tennessee understand that, in the end, decisions concerning the MRS must be based on more than our economic growth. The notion of desiring such a project solely for the jobs that would be created is a form of welfare dependence. East Tennesseans are a proud people. We realize that judgments concerning an issue of such national import- must be decided for reasons of national necessity.

The issues examined in the Clinch River Task Force Report represent legitimate expressions of concern as to how the interactions between the levels of government might be addressed should an MRS be decided on as an element of the waste management process. There is, however, an intellectual pitfall inherent in this very process.

The hypothetical nature of this kind of exercise becomes blurred by the very fact of the immersion in the details of the program. This immersion creates an air of presumption that an impending reality is being dealt with such that it is easy to forget that this program is only a proposal for discussion.

This presumption, coupled with a sense of the power of the DOE leads many to a sense of fatalism. The thought that the DOE is going to be able to do whatever it wants and we should be prepared for it and do the best we can out of it has been expressed to me by several Roane County officials. This does not represent endorsement of any program, but resignation to a perceived inevitability. These officials do not want the MRS, but feel helpless in the face of the monolith.

Whatever the perceptions of state and local officials, however, whatever study is done of these issues surrounding the interactions of the governments in this program, there is another set of issues which must supercede these concerns.

Throughout history Tennesseans have been known for a willingness to shoulder the burdens of participation in our society. From Davy Crockett at the Alamo to Sgt. York in France we have taken our part in the hard jobs. This is true to such an extent that we have been dubbed the "Volunteer State".

There is one thing we want to know, though, before we take these kinds of burdens upon ourselves: "Is this sacrifice really necessary?"

We read of the studies done by the State and the researchers at universities and utilities which indicate that there are alternatives to the MRS which are safer, more efficient, cheaper and better. We read of the General Accounting Office Report which tells us that the DOE has not examined these alternatives sufficiently to be able to evaluate the MRS adequately. We read of the National Association of Regulatory Utility Commissioners saying that the MRS proposal "appears to lack objectivity as it apparently is designed only to serve the DOE's goal... constructing an MRS."

We read these studies, hear these reports, and wonder: "Why are we being asked to take this burden upon ourselves if it cannot even be shown to be necessary?"

II. NEED FOR AN MRS.

The evaluation of the need for an MRS in the waste management system must begin at a curious place:

> "The waste management system could be operated safely without an MRS facility...Both the no-MRS and MRS system are capable of meeting the functional requirements of the waste management system." (Environmental Assessment for a MRS Facility, DOE, Feb., 1986)

Since the system can function without an MRS any assessment of the project must be based on preferability and not actual need. The Department speaks of an assessment based on "comparisons between waste management systems with and without an MRS facility." In order for such a comparison to be valuable it must view the optimum possible arrangement of all alternatives. Such is not the case here.

The intent of this discussion will be to show that there are reasonable alternatives to the no-MRS system as presented by DOE such that many of the advantages claimed by the Department for the MRS system could be incorporated into a no-MRS alternative. Even though systems alternatives will be discussed, my purpose is not to propose a system or to present a particular alternative. It is merely to show that there are reasonable alternatives, which have been presented by qualified experts. An evaluation of systems must include discussion of these alternatives in order to be valid.

The form of the discourse will be to look at some potential system alternatives, then to examine the systems advantages which the Department claims for the MRS over the no-MRS alternative. We will attempt to see if the same advantages can be claimed for a system with no MRS. Further, we will explore the possibility that these alternatives might present advantages over the DOE MRS option.

SOME SYSTEMS ALTERNATIVES

The DOE no-MRS alternative, which is used for comparison to the MRS system in the MRS Submission to Congress from March 1985 is about as haphazard and unimaginative a proposal as is possible. It shows neither planning nor initiative. The picture presented is of one cask at a time trickling in on trains and trucks to a repository where all functions of the waste management system are performed. No attempt is made at reduction of transportation miles. No attempt is made at systems integration. No attempt is made at schedule control. No quality control seems to be available. This is a truly appalling picture. But this is not the only no-MRS option which can be put together.

Elements of an improved no-MRS option might include the following:

1. At reactor dry cask interim storage.

2. Dual purpose or universal use casks, good for both storage and transportation or perhaps even storage, transportation and final disposal.

3. Dedicated train shipments from reactors with concerted effort toward minimizing or eliminating truck shipments.

4. Concerted effort directed toward maximizing cask sizes.

5. Rod consolidation, if done, at reactor.

6. Packaging for disposal at reactor.

7. Commercial or DOE fuel preparation subcontractors.

1. At reactor dry cask interim storage demonstration projects are already under way at the Virginia Power Surry Plant and at Carolina Power and Light. Fuel rods have been removed from the cooling pool and are in storage casks on the reactor site. This is much the same technology as proposed for the MRS, so there cannot be much disagreement as to the preferability of the one technology over the other.

2. Dual purpose casks are already in use in the Federal Republic of Germany. The casks at Surry are similar to the German casks, in that they are capable of being licensed for transportation use as well as storage. This option eliminates a step in the handling of fuel if dry cask storage is to be used. It also reduces the number of casks necessary for waste management. We have been gratified to learn that the DOE will let design contracts for bid on a large dual purpose cask sometime later this month.

The universal cask takes this idea one step further by allowing for storage, transportation and emplacement in the repository in the same cask. Optimal use of these casks would require handling of the fuel the least of all systems possible.

Both of these options received favorable review in an extensive study of casks systems begun by Westinghouse, TVA and Florida Power and Light. (WTSD-TME-085) More development work in this area would be of great benefit.

3. Dedicated trains leave the reactor loaded with nothing but spent fuel casks. They go directly to their destination (either the repository or the MRS). About 70% of reactors already have easy rail access. With on site dry

cask storage in dual purpose casks it would be easy enough to wait till the reactor storage pads had enough full casks to warrant a shipment, then ship directly to the repository.

For reactors without rail access it may be necessary to employ some short-haul truck shipments to the nearest railhead. Barge shipments to nearby railheads is an unexplored option with possible uses for minimizing truck shipments.

4. Maximizing cask sizes allows for fewer shipments. 96% of reactors have cask handling capabilities of 100 tons or more. A family of large, standardized casks can be developed which can service all reactors, yet still allow complete systems integration.

5. In all of the above options there is not any increase in handling of fuel rods at the reactors. The fuel rods must be removed from the pool and placed in a cask, no matter what. The only expansion of activities called for at reactors is in the on site storage, which only requires building of concrete pads and placement of the casks on them.

Rod consolidation, however does introduce a new activity at the reactor. Consolidation involves taking the fuel rod assemblies apart and putting them together in tighter configurations. This technology is new and has not been shown to be possible at the level of production that would be necessary for regular use in the waste management system. Demonstration projects in rod consolidation are under way at the Millstone Plant (Northeast Utilities), Surry Plant (Virginia Power) and at Prairie Island Nuclear Plant (Northern States Utilities). Another consolidation project is on hold along with the TVA Brown's Ferry Plant. These are all in-pool consolidation techniques.

Dry rod consolidation techniques are largely unproven. A demonstration project is scheduled to begin later this year at the Idaho National Energy Labs, but the processes are still in the design stages (or as one nuclear engineer put it to me, "in the cartoon stages").

Consolidation presents the attraction of being able to cut storage and transportation problems in half, twice as much fuel can be put into the same space. However, this is the point at which there is the greatest risk of worker exposure and accident. These technologies should be examined carefully before being implemented, but if they are to be used then use at the reactor rather than further along in the system solves some of the most pressing problems of the system.

6. As long as we are placing rods into a container at the reactor anyway, why not place them into the canister in which they will be disposed of. If a dual purpose cask is selected it would need to be designed to accept these disposal canisters. If a universal package is to be used, no separate canister would be necessary.

7. A final element could be a commercial fuel packaging service industry. DOE subcontractors could travel as teams to reactors to implement the functions of fuel packaging, thus relieving the reactor staffs of these tasks. This practice could insure commonality of standards and practices in preparation and packaging, as well.

Since all functions of the waste system have been implemented, up to and including placement of the spent fuel in transportation casks, the Department could be said to have taken title to the spent fuel when preparation for packaging is begun, thus the process would be paid for out of the Nuclear Waste Fund, relieving the utilities of the burden of paying for storage and packaging over and above their contributions to the Fund.

SYSTEM EFFECTS OF AN IMPROVED NO-MRS OPTION

For purposes of comparison the same systems effects categories will be used as were used by DOE in their need and feasibility studies: 1. System Development. 2. System Operation. 3. System Cost. 4. Radiation Exposure. All citations in the following two sections will be from Monitored Retrievable Storage Submission to Congress, Review Copy, Dec., 1985, DOE/RW-0035, unless otherwise designated.

1. System Development.

Implementation of a system containing the above features would allow planning and development of the further features of the total system at the earliest point of any system proposed. As soon as demonstration projects of the technologies are completed, licensing of the processes decided on could commence. When licensing is complete, the implementation of the system would not have to wait on the construction of a new major facility.

Such a system allows for the earliest possible planning as to transportation routes, waste acceptance schedules and packaging systems.

2. System operation.

A system including the above elements separates the waste acceptance schedule from the repository emplacement schedule, thus allowing for continuity in the system even if problems should arise at a repository such that casks could not be transported to the repository for a time. Further, it would extend the same advantage to potential operations failures at an MRS.

The use of dedicated train shipments from the reactors would minimize transportation impacts to the minimum attainable. Perhaps more important is that the reductions in transportation impacts would come in the more heavily populated eastern states, as well as in the plains states which is where the DOE MRS proposal achieves its impact reductions. Rod consolidation, if it is to be used, would further reduce these eastern transportation impacts if done at the reactors. This reduction in transportation miles must be seen as being accompanied by reduction in potential for accidents in route and in reduction in exposure to the public.

Simplification of facilities at the repository would be allowed. The only functions necessary would be removal from the dual purpose cask and emplacement in the repository, or in the case of the universal cask simply emplacement.

Elimination of cask and canister handling steps would result in the minimum worker exposure achievable.

3. System Cost.

Since the packaging functions at the reactors would be the only packaging functions engaged in and handling steps are eliminated, the cost of packaging operations would be reduced. Further, the cost of a major new facility would be eliminated. The only additional cost to the utilities would be the concrete storage pads, since the storage casks, being the transportation casks, would be paid for out of the Fund. If rod consolidation is used, there would be some additional cost for the equipment used in this operation--once again paid for by the Fund.

Reduction in transportation cost is dramatic since truck transportation would be at the absolute minimum and transportation miles would be reduced to the minimum.

4. Radiation Exposure.

With elimination of handling steps worker exposure is reduced to the minimum. With reduction of transportation mileage public exposure is reduced to the minimum.

COMPARISON OF ADVANTAGES AND BENEFITS

In the 1987 of Monitored Retrievable Storage Submission to Congress, six advantages for the MRS over the no-MRS option are identified as the basis for the decision to include an MRS in the waste management system. We can now look at these advantages and compare potential advantages of an improved no-MRS system.

1. Improvements in System Development.

> "The MRS facility would accelerate the system-development schedule because it would allow the DOE to plan, design and deploy major components of the waste-management system in advance of the geologic repository. These major system components include the pre-waste-emplacement functions: acceptance of spent fuel from the utilities, transportation from the reactor sites to the MRS facility, spent fuel consolidation, and loading into canisters...A single focal point for early system integration would be established."

Design, planning and deployment of the systems components is not dependent upon the identification of a physical locale for the systems, but rather on the identification of the systems themselves. A focal point for system integration should be a system component around which the rest of the system can be designed. Decisions as to the uses of elements described above (at reactor dry storage, dedicated train shipments from reactors, dual purpose casks or universal casks, etc.) would allow the same early planning of systems components without diversion of resources to a major construction project.

Advantage: Close. Shade slightly to the improved no-MRS.

2. Accelerated Waste Acceptance from Utilities

"Since the MRS facility would begin operations in late 1996 and reach full-scale operations by 1998, the waste acceptance rates of the waste management system would start exceeding reactor-discharge rates 5 years earlier whan would otherwise be possible...New temporary storage capacity--and possibly rod consolidation--will have to be provided at some reactor sites in any event."

With the improved no-MRS options, acceptance of spent fuel can begin as soon as demonstration projects and licensing are completed, without waiting for construction of the MRS, giving the earliest possible relief to crowded reactor pools.

Advantage: Improved no-MRS.

3. Improvements in System Reliability and Flexibility

"The inclusion of significant storage capability at the MRS facility would provide a system buffer that would allow the unloading of reactor storage pools to be independent of the loading of the repository. Furthermore, delays or disruptions in one component of the system would be less likelv to affect the progress of the entire system."

The decoupling of pool unloading from repository placement accomplished by dry cask at reactor storage has all the adventages claimed for the MRS storage system. A sufficient range of temperatures of casks of fuel would exist by the time the repository began operation to enable shippers to be selective in choosing casks for shipment to the repository.

Further, "delays or disruptions in one component of the system" would, if that component were the MRS, constrain the operation of the whole system, at reactors and at the repository. This problem is avoided with at reactor preparation.

Advantage: Improved no-MRS.

4. Advantages for the Repository

> "Because many of the major waste-preparation functions would be performed at the MRS facility, the waste-handling surface facilities at the repository and the associated operations would be simplified."

The same things being true for at reactor preparation there is no advantage gained here.

> "The repository would receive fewer shipments, all shipments from the MRS facility would arrive in one mode (by rail)."

With the use of dedicated train shipments from reactors and inter-modal transport to railheads where necessary, the same advantages can be claimed for the improved no-MRS.

> "The MRS facility would ship to the repository canisters that are free of surface contamination with radioactive material."

One of my favorites. Why should teams at reactors not be able to decontaminate canisters as well as teams at the MRS. Standardization of practices is what will bring quality control, not just centralized location of practices. If workers cannot be depended on to decontaminate canisters at reactors can they be depended on to decontaminate casks? If not we have the specter of casks with surface contamination traveling through the major population centers of the east, while the clean, safe casks are sailing serenely across the desert.

In general, the problems for the repository that the MRS supposedly solves are not elimimated from the system, just relocated.

Advantage: About even (except for those nasty casks going to the MRS.)

5. Improvements in the Transportation System

> "Since all of the spent fuel consolidated at the MRS facility would be shipped in dedicated trains, the number of shipments to the repository would be significantly reduced. Furthermore, the MRS facility would minimize the distances of spent-fuel shipments by trucks in less efficient casks...and reduce the number of cross-country routes."

Since all spent fuel from the reactors would be shipped in dedicated trains, shipments would be reduced even more than in the MRS system, that reduction coming in the more densely populated eastern cities and states. Since trucks would only be used for short inter-modal transport to a railhead, truck transport would be at the minimum achievable.

If we add the number of routes eliminated by not shipping to the MRS we will have reduced the number of routes in heavily populated areas by the maximum possible. Advantage: Heavily with the improved no-MRS.

6. Institutional Benefits

"The experience gained from interactions with the State of Tennessee would allow better definition of certain institutional arrangements for the repository system. Furthermore, it would allow the DOE to demonstrate...that it is willing to be a responsible corporate citizen and neighbor."

If the interactions of the DOE with the State of Tennessee so far are "demonstrations" of neighborliness, then I am afraid I don't understand the notion very well. What the DOE has demonstrated to date is a willingness to drag a state kicking and screaming into a project that it wants no part of. The only advantage possible here is to relieve the pain inflicted on the state by the DOE.

Advantage: Improved no-MRS.

The advantages and benefits, then, upon which DOE claims to base its evaluation of the need for an MRS can all be had with an improved no-MRS system.

COSTS AND IMPACTS OF DEVELOPING AN MRS

Costs and impacts of the MRS system, as evaluated in the Review Copy of the Submission to Congress are considered to fall into three categories: 1. Financial Impacts. 2. Environmental Impacts. 3. Perceived and Potential Programmatic Impacts.

1. Financial Impacts.

Since 1985, DOE has revised the estimate of incorporating an MRS into the waste system upwards from between 1.4 and 2.0 billion dollars to between 1.6 and 2.6 billion dollars, then downwards to 1.5-1.6 billion. Theseestimates admittedly do not include impact mitigation payments and tax payments which could easily exceed $1 billion.

The primary costs of a system incorporating the features we have been discussing would be in the purchase of dual purpose casks. This cost would be reduced by the elimination of the 1600 casks for the MRS. The only other additional cost would be in case of use of rod consolidation at the reactors.

All of these costs would be reduced by increase of storage capacity at the reactors (in the case of at reactor consolidation), as well as by reduction of transportation mileage. More reductions in cost can be seen by elimination of a fleet of casks for transportation of waste to the MRS and again by elimination of a fleet of casks for transportation to the repository, since all these functions would be filled by the dual purpose casks or universal casks.

How the reductions in cost in the most recent Submission are arrived at exactly is not very clear. Differing reasons have been presented at different times. One of the claimed justifications comes from using repository specific cannisters at the MRS. This is an interesting notion, since it supports the possibility of using the disposal cannister from the reactor, and reduces the justification for the MRS.

More precise cost analysis must be done before this category can be evaluated exactly, but it should be clear that an improved no-MRS system would be a substantial savings over a system with an MRS.

2. Environmental Impacts

> "The estimated total waste-system risks and environmental costs do not differ significantly for systems with and without an MRS facility."

Not much is to be said here either way, unless you consider the elimination of a large, unnecessary, unwanted facility an environmental improvement.

3. Perceived and Potential Programmatic Impacts

> "The perceived and potential programmatic impacts of adding an MRS facility are the weakening of resolve to develop a repository, the potential for diverting the resources needed to develop a repository, and the enlargement of the system to be implemented."

The use of an improved no-MRS system has the unique advantage of being able to relieve reactor pool storage pressures, without reducing the will to develop the repository and without diverting resources for a major construction project.

There is the further irony that the linkage of the MRS opening to the issuance of a construction permit for the repository reduces the force of one of the claimed advantages for the MRS. If the MRS is linked to the repository in order to render assurance that the MRS will not become a de facto repository, then the function of the MRS as a relief valve in case there is trouble in the siting of a repository is reduced. You can't have it both ways.

CONCLUSION

To repeat what was said earlier, the point here is not to present a system for handling radioactive waste. The point is to show that there are reasonable alternatives to the DOE proposal which have not been taken into account by the Department in its assessment of need and feasibility of an MRS facility.

The reason this point is so important is that, by the Department's own admission, the need for such a facility can only be established by a comparison of the alternatives to find the best solution to the problems we are faced with. Any assessment which does not fairly represent the alternatives in their optimal form cannot be seen to be valid.

All of the ideas used above as ways of improving the no-MRS alternative come from recognized authorities in the field of nuclear energy--from TVA, Northeast Utilities, Virginia Power, Northern States Power Company, Florida Power and Light, Westinghouse Waste Technology Services Division, Nuclear Assurance Corporation, Environmental Policy Group of the State of Tennessee, Energy, Resources and Environment Chair of the University of Tennessee, and many more.

Research and development of techniques required for at reactor preparation processes is being carried out, but by the utilities themselves, with little assistance from DOE. The clear thrust of DOE's R&D is towards the MRS. Evaluation of the best system cannot be done without knowledge of the greatest potential of the available alternatives.

It must further be seen that Department's presentation of alternatives puts financial pressure on the utilities to support the MRS. Lack of support for development of technologies for at reactor preparation discourages this research. Exclusion of the possibility of the Fund paying for dual purpose casks (since these casks are the transportation casks and eliminate the need for the MRS casks) puts the burden for dry cask, at reactor storage on the utility, over and above the commitment to the Fund. These research projects must be given an even chance to prove themselves.

These are reasonable alternatives which must be evaluated fairly and with candor. Prejudgment of issues like these can only end in poor judgment. If we are to solve these problems arising from the presence of these, the most dangerous substances ever seen on the earth, we must look objectively at alternatives and make reasoned decisions on the basis of the merit of proposals. In no other way can we be certain that we have made the best choices possible. And the best choices possible are the only choices we can afford.

SOME COMMENTS ON S 839

There were two axes along which debate proceeded in the discussions leading up to the Nuclear Waste Policy Act of 1982. One was the level of state and local participation which would be allowed in the programs for disposal of spent nuclear fuel. The other was the technicological debate over the disposal or storage options themselves. In a real sense, S 839 can be seen as a return to positions held in that debate on both those axes.

The outcome of the NWPA on the technical dispute was to decide for deep geologic disposal and against long term surface storage as represented by the Monitored Retreivable Storage proposals. S. 839 would authorize an MRS, returning to that position held in the earlier debate.

As to the siting procedures for the repository, S. 839 would bypass all the procedures developed for site screening from a technological view point and begin a system of looking for a site not for sound technical reasons, but for the reasons of economic need. The system of trying to find the best site from a field of candidates selected for geologic reasons and narrowing that field through technological review would be short-circuited. The prime consideration would then become finding the state with the greatest need or desire for the economic incentives.

Along the other axis of debate S 839 retrenches itself in an old position as well. The idea that no state will willingly participate in these kinds of programs leads to the idea that the only way they can progress is to use either coersion or incentives.

The NWPA is a unique document. For the first time ever state and local participation in decisions as to a major federal program was included in the law. The right of siting disapproval by a state is unprecedented. Although the use of this right in the case of the State of Tennessee has been clouded by ambiguity, there has never been this level of control at the state level for programs such as this before.

This bill (S 839) removes this level of participation by taking the right of notice of siting disapproval from any state entering into an incentive agreement and by taking away the right of judicial review of any decisions made by the Secretary under this title. The states and tribes are in essence told to take the money and keep quiet.

All discretion as to the breaking of an agreement under this Act is placed in the Secretary. The states can only dissolve the agreements at the discretion of the Secretary. The Secretary can dissolve the agreements for any number of reasons, most of them subjectively evaluated.

This situation, coupled with the loss of the right of judicial review presents the very real possibility of the DOE entering into an agreement to build an MRS or repository, beginning the incentives payment program, building the facility then changing its mind. At this point the Secretary (almost assuredly not the same as the one who made the agreement in the first place) could dissolve the agreement, require the repayment of all monies paid under the agreement to that time, require interest and then continue the operation of the facility. This action being exempt from judicial review, it would not even be possible for the state to seek redress.

This is not to claim that the Secretary (present or future) would act in so dishonorable a manner, but to indicate the degree of divergence from the principles of full participation inculcated in the NWPA. S. 839 and the NWPA are at opposite ends of the sprectrum on more issues than one.

The difficulties with the programs do not stem from the fact of state and tribal participation in the decision-making processes, but from the lack of that participation. The DOE has failed to grant that level of judgment warranted in the NWPA. Going further to remove the possibility of cooperation will not solve the difficulties of the programs, but make them worse.

These programs must be returned to the paths laid out for them in the NWPA. Decisions must be made for sound scientific reasons, not for reasons of political expediency. States and tribes must be granted the full participation in the processes envisioned in the NWPA. Only then can the waste management program be gotten back on track.

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TESTIMONY OF RON LURIE, MAYOR

CITY OF LAS VEGAS

BEFORE THE
SENATE COMMITTEE ON ENVIRONMENT & PUBLIC WORKS
SUBCOMMITTEE ON NUCLEAR REGULATION

JUNE 18, 1987

THE CITY OF LAS VEGAS HAS BEEN PRESENT IN WASHINGTON, D.C. ON THREE SEPARATE OCCASIONS DURING THE PAST SEVERAL MONTHS, TESTIFYING ON VARIOUS ASPECTS OF THE DEPARTMENT OF ENERGY'S (DOE) EFFORTS TO DETERMINE A SITE FOR THE LONG TERM DISPOSAL OF THE NATION'S SPENT RADIOACTIVE WASTE. THESE TRIPS TO WASHINGTON HAVE ENTAILED GREAT TIME AND EXPENSE ON THE PART OF THE CITY, AND ARE WARRANTED ONLY BY THE EXTREME LEVEL OF CONCERN THE CITY HOLDS REGARDING THIS ISSUE. ACCORDINGLY, THIS TESTIMONY IS A CONTINUATION OF AN ONGOING COMMITMENT BY THE CITY OF LAS VEGAS TO HAVE ITS VIEWS HEARD WHENEVER LEGISLATION CONCERNING THE DISPOSAL OF RADIOACTIVE WASTE IS PROPOSED. THEREFORE, I WOULD LIKE TO THANK SENATOR BREAUX AND MEMBERS OF THE SUBCOMMITTEE FOR PROVIDING US WITH THE OPPORTUNITY TO TESTIFY ON SENATE BILL 1266.

THE CITY OF LAS VEGAS FAVORS THE GENERAL APPROACH EMBODIED IN A MONITORED RETRIEVAL STORAGE (MRS) SYSTEM WHICH WOULD STORE RADIOACTIVE WASTE IN AN MRS FACILITY FOR 50 YEARS BEFORE IT IS TRANSPORTED TO AN UNDERGROUND REPOSITORY. INSTEAD OF HAULING NUCLEAR WASTE ACROSS THE COUNTRY TO ONE OF THE THREE SITES UNDER CONSIDERATION FOR LOCATION OF AN UNDERGROUND REPOSITORY, KEEPING IT IN SPECIALLY DESIGNED CANNISTERS AT AN MRS SITE FOR 50 YEARS WILL ALLOW THE HEAT AND RADIOACTIVITY LEVELS TO DROP DRAMATICALLY.

A MONITORED RETRIEVAL STORAGE SYSTEM WOULD ALSO PROVIDE THE COUNTRY WITH THE BREATHING SPACE IT CURRENTLY DOES NOT HAVE, DUE TO THE NUCLEAR WASTE POLICY ACT'S MANDATED DEADLINES FOR OPENING OF A GEOLOGICAL REPOSITORY. CURRENTLY, THE COUNTRY IS LOCKED INTO GEOLOGICAL DISPOSAL, WHERE OTHER OPTIONS MAY BE MORE SUITABLE. FOR EXAMPLE, IT IS GENERALLY ACKNOWLEDGED THAT REPROCESSING OF NUCLEAR WASTE IN THIS COUNTRY IS NOT YET ECONOMICAL. HOWEVER, IF REPROCESSING DOES BECOME FEASIBLE, RADIOACTIVE MATERIAL CONTAINED

IN AN MRS WILL BE READILY RETRIEVABLE.

THE APRIL 28, 1987 HEARING BEFORE THE SENATE COMMITTEE ON ENERGY AND NATURAL RESOURCES SUPPORTED THIS VIEWPOINT. DR. ALVIN WEINBERG OF THE INSTITUTE FOR ENERGY ANALYSIS SUGGESTED THAT A MONITORED RETRIEVAL STORAGE FACILITY COULD SAFELY STORE RADIOACTIVE WASTE FOR 50 YEARS. HE ADDED THAT THE LONGER YOU HOLD THE WASTE ABOVE GROUND, THE LESS DIFFICULT IT IS TO STORE. BEN RUSCHE (DOE) STATED THAT STORAGE IN A MONITORED RETRIEVAL STORAGE FACILITY WOULD NATURALLY REDUCE HEAT AND RADIOACTIVITY OVER TIME, AND SHOULD BE THE FIRST STEP IN ANY COMPREHENSIVE NUCLEAR WASTE SYSTEM. HE ALSO ADDED THAT A MONITORED RETRIEVAL STORAGE FACILITY COULD BEGIN TO RECEIVE WASTE BY 1998. USING AN MRS FACILITY, IT WOULD TAKE 8 YEARS FOR THE EXISTING NUCLEAR WASTE STOCKPILE TO BEGIN TO DIMINISH. FINALLY, THE MRS SYSTEM IS CURRENTLY IN USE, OPERATING SAFELY AND EFFECTIVELY IN FRANCE AND SWEDEN.

TURNING TO SENATE BILLS 1266 AND 1141, THE CITY OF LAS VEGAS FAVORS ENACTMENT OF BOTH. WHILE NOT IGNORING THE IMPORTANCE OF AN UNDERGROUND REPOSITORY, SENATE BILL 1141 MANDATES THAT NUCLEAR WASTE BE STORED ON THE GROUNDS OF A COMMERCIAL NUCLEAR POWER PLANT OR AN MRS FACILITY FOR 50 YEARS BEFORE BEING TRANSPORTED TO A HIGH-LEVEL NUCLEAR WASTE REPOSITORY. SENATE BILL 1266 ESTABLISHES MRS FACILITIES AS A WAY TO RESOLVE THE PROBLEM OF HIGH-LEVEL RADIOACTIVE WASTE STORAGE.

THESE BILLS ARE SUPPORTED BY THE CITY FOR A VARIETY OF REASONS. FIRST, THE CITY HAS ALWAYS MAINTAINED THAT, SINCE THE EASTERN PORTION OF THE COUNTRY IS THE PRIMARY GENERATOR AND BENEFICIARY OF NUCLEAR POWER, THEY SHOULD SHARE IN THE RESPONSIBILITY FOR DISPOSING OF THE WASTE. SENATE BILL 1266 RECOGNIZES THIS CONCEPT AND CALLS FOR THE CREATION OF STORAGE FACILITIES IN ALL FOUR REGIONS OF THE COUNTRY. BEYOND THE IMPORTANCE OF EQUITY, HAVING

RUSH HOUR CURFEWS ON THE TRANSPORTATION OF NUCLEAR WASTE RECOGNIZES THE REFUSAL OF DOE TO ASSURE METROPOLITAN AREAS LIKE LAS VEGAS, THAT NO SHIPMENTS WILL OCCUR DURING THOSE HOURS WHERE ACCIDENTS ARE MOST PROBABLE. NATURALLY, LAS VEGAS WHOLEHEARTEDLY SUPPORTS THIS SANCTION.

IN CONCLUSION, THE CITY OF LAS VEGAS IS IN FAVOR OF BOTH SENATE BILLS 1266 AND 1141, BECAUSE THEY ADVANCE A RATIONAL APPROACH TO THE HANDLING, STORAGE, AND TRANSPORTATION OF RADIOACTIVE NUCLEAR WASTE. THE ADOPTION OF AN MRS SYSTEM TO STORE RADIOACTIVE WASTE UNTIL SUCH TIME AS THE MATERIAL HAS COOLED AND THE DANGER OF SHIPMENT IS REDUCED IS SOUND POLICY. WHILE RECOGNIZING A NEED FOR THE SAFE STORAGE AND DISPOSAL OF NUCLEAR WASTE, THE CITY OF LAS VEGAS ALSO BELIEVES THAT THOSE STATES RESPONSIBLE FOR ITS GENERATION SHOULD ALSO TAKE RESPONSIBILITY FOR ITS DISPOSAL. THIS POSITION HAS NEVER CHANGED AND LAS VEGAS WILL REMAIN EVER VIGILANT TO INSURE THAT ITS CITIZENS WILL NEVER EXPERIENCE ANY ADVERSE EFFECTS FROM THE SHIPMENT OR STORAGE OF ANY HAZARDOUS MATERIAL.

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